THE

SOUTHERN AGRICULTURIST.

APRIL, 1835.

PART I.

ORIGINAL COMMUNICATIONS.

On the Culture, Harvesting and Threshing of Rice, and on the Rust in Cotton.

To the Editor of the Southern Agriculturist.

Darien, (Geo.) March 6, 1835.

Dear Sir,—Your letter of January 18th, I have received. It would give me great pleasure to contribute to your work, from time to time, as I did at an earlier period; but I am now sixty-one years of age, and every moment of my time, almost, is occupied, by avocations of various character, for I manage my plantations without the intervention of any white men. * * * *

The last year has been, in climate, a most extraordinary one with us. Nature appears to have broken through all rule. It has been hotter, and it has been colder than memory furnishes any experience of; and as in other things, these extremes have been badly borne by the different objects of our culture; neither our rice-crops, our cotton-crops, nor our cane-crops have been good. Believing it may be well to state what may be considered the average annual product of any district, I would say, for the present year, the rice-crop of the Alatamaha, may be taken at about fifty bushels to the acre. I am, myself, but a small rice-planter; my fields, however, have given me, after saving seed, sixty

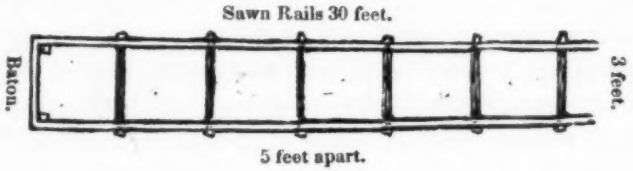
bushels per acre, and my course of cultivation is as follows: Drains cross the fields at every fifty feet; the water is taken in at one side of a field, and the draining trunks are at the opposite, so that every portion of the water is thus changed. This, I believe, important, more particularly to those who employ as much water as I do in my cultivation. My fields are, in winter, carefully broken up, either by the plough or the hoe, after the stubble has been burnt off: they are kept dry throughout the winter, as well more completely to pulverize them, as to enable them the better to bear the more abundant waterings of the summer; for I point-flow, (a matter I deem of importance, in spite of the delicacy of the operation) because my fields are surrounded by extensive marshes, filled with black birds, and other enemies of the rice; and it is, therefore, matter of moment to limit the time that the rice is subject to their depredations as much as possible. Again, as soon as the rice is all well up and will bear the operation of the hoe, it is cleaned, kept dry for two or three days after cleaning, in order completely to kill the grass, and the water is then given back to the field. In truth, the fields are never permitted to be dry, unless for the purposes of hoeing and cleaning, or for the purpose of destroying the worms, if the water worm has taken to the roots of the rice. By this continued use of water, my black overseer has found no difficulty in attending six acres, to the hand, for these two years past; and the people are generally out of their work by one or two o'clock of the day. We commence our plantings upon the Alatamaha from the 1st to the 10th of March, and are enabled, therefore, with common prudence, to get through our plantings before the appearance of the rice-birds that begin to visit us, about the 20th of April. This early planting, too, saves us from injury in the fall of the year, from the same destroying enemy.

There have been many threshing machines introduced into this quarter within the last two or three years. I have approved of none of them. They are all copied from the Scotch thresher, without its simplicity or strength. Thirty-five years ago I was in Scotland, and saw many Scotch threshers in useful operation. They were cylinders about four feet long and forty-two inches in diameter. This diameter saved one multiplication in the gearing; the cylinder, instead of being furnished with teeth, either

moveable or fixed, had four bars of iron running lengthwise the cylinder which served, first, to lengthen it, and then the instruments by which the rice was stricken off the straw as it passed through the feeding rollers. The cylinder made 300 revolutions in every minute; there being four bars or beaters upon its circumference, 1200 blows were, therefore, given in every minute, and as the feeding rollers were from three to four inches in diameter only, and made from thirty to forty revolutions in a minute only, every grain of rice that was presented lengthwise to the beater would receive a blow, and be separated from the straw. Accordingly, threshing by machines in Scotland was considered much cleaner and more complete than the use of the flail. Not so, the American imitations of the Scotch thresher, which have heretofore been inferior to the flail, and required its aid in threshing out the bands and other portions of the sheaf. Many of the difficulties that have occurred in regard to the threshers in this country, have arisen, as I believe, from men desiring to design something new, that they may patent, rather than something old, which other men, and long use, have perfected. But time and experience will gradually improve these machines, and the thresher will eventually become really useful in this country, as it has for a long time been in Scotland, where it was designed, and in England where it has even been improved. This end having been once accomplished, there will remain but one other to bring our rice-culture and harvest to a greater degree of perfection, than the cultivation of any other article in our own country, or probably, in any other country, at the present time. Some mode must be adopted for bringing in our rice, at the harvest, from the field, other than that of carrying it upon the head—the only really laborious part connected with the cultivation of rice.

We must leave our rice, at harvest, in small cocks in the field for a few days, until the land gets a little dry, where I think, light carts with low broad wheels, might be drawn between our drains (taking up the cocks of rice as they go along) by the people engaged in harvesting the rice; and when the carts reach the road from banks or high land, horses might be substituted, which would carry the rice quickly into the barn-yard. But what would be better still, as I think, would be to construct light

portable rail-ways in the following manner: Sawn rails, say of thirty feet feet long, three inches by two; let two of these rails be placed lengthwise, say three feet asunder, connected together by batons at every five feet, placed on their under edges, as thus:

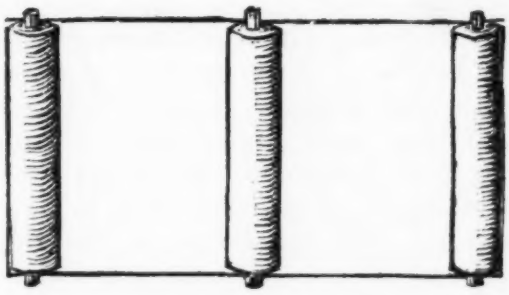


This portable rail-way would, therefore, resemble a long heavy ladder. They could be carried by from two to four persons, each, and laid down in the morning across ditches and drains where the rice had been cut the previous day, and was ready for carrying in. They might be connected together by hooks at their ends, so as to form a continuous road, from the barn-yard to the extremity of any given field. Light Jersey wagons with their axle-trees adjusted to the width of these rails, with wooden flanges screwed on upon the outside of the wheels, so as to keep the wagon upon the rails, and if there should be any intervening high land between the barn-yard and the field, the flanges might be made broad enough to bear the weight of the wagon, when horse power might be intervened, and the rail-road saved over such space of high land.

Now, at what price shall we estimate the cost of one mile of this rail-road? The rails at the highest cost of either pine or cypress, if purchased by the planter, will not exceed $180. 100lbs of 20*d* nails $10; one month's work of two black men in putting together, $30 in all, say, two hundred and twenty ($220.) Now one mile of such road would be all sufficient, for an extensive plantation, the carts would cost money, but would be applied to other uses, and would last, as well as the rails, if housed in the summer, very many years. I had procured the rails and was preparing to carry the plan into effect, for 150 acres of land, when the other day a book written by Babbage, a man of some celebrity in the philosophy of mechanics, fell into my hands. Among the many tables contained in this book, was one giving a statement of the forces necessary to move ponderous bodies over surfaces of various degrees of smoothness—for instance, to draw a stone

weighing 1080 pounds, and roughly chisled, along the floor of a quarry whence it was taken, also roughly chisled, required about 750 pounds—placing the stone upon a platform of boards, and drawing it over the same surface, required about 700. But substituting between this platform and the rough flour of the quary, rollers of three inches in diameter, thirty-eight pounds drew this stone of 1080 weight. Now, what will prevent every two of our harvesters being provided with a platform of light boards six feet long and three wide, resting upon three rollers of four inches in diameter, provided with short iron gudgeons at their extremities, which gudgeons will revolve in iron thimbles which are secured by projections from the bottom of the platform? Thus,

Diagram of the Platform Reversed, shewing the Rollers at the bottom.



Such a platform so arranged, for wood and iron labour, should not cost above six dollars; and, I think, that a man would draw by a single trace chain attached to the front of it, four bundles of rice with more ease to himself than he would carry one upon his head; for after these rollers had once passed along the field, the rice stubbles would be pressed down, the surface would become smooth in a great measure, and it appears to me, the rollers would revolve with great ease and with little expenditure of labour on the part of him drawing the platform. It will be understood, of course, that a few two inch plank should be provided to bridge temporarily any canal or ditches happening in his way, and which could be removed from day to day to the field of operation. I will, at least, if I live until the next harvest, introduce this system upon my own plantation; and if I succeed, I shall believe that I have rendered great and important benefits, as well to the servant as to the master of the plantation; for the carry-

ing in of the rice upon the head, is the only labour that has been revolting to my feelings upon a rice plantation.

The cotton crop in this district of country has not averaged more than 100 pounds of clean cotton to the acre. The rust, that extraordinary and increasing evil, has, apparently, taken hold of all of our high lands. I have, for many years, believed, and still believe, that fire, passed over the land, is the best preventative within our reach; never having doubted that a great portion of the injuries to which vegetable life is subject, owes its origin to the insects that, in countless numbers, fill the earth, the air, and the water, I have believed, that in consuming by fire the vegetable matter upon the surface, something, at least, would be done to lessen their multiplication. But some more efficient remedy must be found. Where the lands are low enough, I would cover them with water during the winter. When this is done, however, it must not be done by halves. The water must be kept deep and long upon the lands. I am in a course of experiment, at this time, upon this subject. I have 250 acres of low ground which have been under water since the 1st of January—nor shall I withdraw the water from the land until the 1st of April; after which, I will, as speedily as possible, plant my corn and cotton in the ridges of the previous year—in the hope that the grass seeds will, by this long immersion, be swollen and destroyed, and that even the chrysalis of the cut-worm, (the great enemy to cotton and corn in low grounds under dry culture) may perish in this long flooding.

But I will take some other opportunity of communicating to you the course of my labours in reclaiming a considerable body of salt marsh, and of fresh prairie land within a mile of the sea; and,

I am, very respectfully, your obed't. serv't.

THOMAS SPALDING,

Of Sapello Island, Darien, Georgia.

On Rural Buildings.

"All was rough and neglected in the neighbourhood of the house; a paltry garden, no pains taken to make the vicinity dry and comfortable; and a total absence of all those little neatnesses which give to the eye so much pleasure in looking at an English farm-house. There was, notwithstanding, evident signs, that all this arose only from want of taste or ignorance, not from poverty and the negligence which attends it."—*(Dinmont's Farm-house:* See 25th Chap. *Guy Mannering.)*

THERE is, probably, no indication of the prosperity of a country more unerring than the state of improvement on farms and plantations. If they shew good fencing, barns, stables, dwellings, in a word, snug and comfortable homesteads, for the accommodation of man and beast, and are built in a convenient and durable manner, we may feel assured that it has attained an advanced condition, in which the accumulation of capital, secures it against any very sudden vicissitude. If on the contrary, this picture be reversed, the contrary conclusions will be found equally true. With this consideration before us, it is humiliating to look over large sections of this and the neighbouring States, in the lower districts especially, and witness the frequent recurrence of dilapidation that every where presents itself. Among the causes, we are persuaded, that one is the indifferent manner in which settlements are originally made, and we intend to make some remarks upon the incidents attending it.

The first object with one who cultivates the soil, should be to make the spot on which he locates himself, his home—no maxim is weakened by fewer exceptions, than that

> "He who by the plough would thrive
> Must either hold himself or drive."

The occupation is emphatically one of *husbandry*—that is of a nice economical management, where the means are judiciously adapted to the end; with a just reference to the cost and product. And where, while the leading feature is to expend as little as may be consistent, with the success of the undertaking, the enjoyment of true comfort should be promoted.

On comfort we must especially insist—comfort to both man and beast, are indispensable to the developement of the energies of the one, and the labour of the other. Therefore, the man who would be a farmer, should in the onset, erect a house, which he and his family

would regard with pride and affection as their home. As soon as it is invested with this endearing character, the domestic affections that are even traced by it adorn it within and without; the decoration of a flower plat, and a well inclosed kitchen garden, shew the pleasure taken in, and the fixed attachment formed to the spot; the wife and daughters are then not anxious and unhappy, unless on a visit to the city or neighbouring town. Their vanity, and vanity all have in some form or other, and, indeed, unhappy would we be without this stimulating motive, would be reasonably gratified. It would then be shewn, not in absenting themselves, but in exhibiting their home, in the greatest degree of neatness and convenience, and making it a source of pleasure to all their visiters. Of course, as incidental to their object, a good barn, stables, and outbuildings, dairy and poultry-house, would be indispensable. When once so fixed, home will be the sweetest place to the proprietor. It will then be to him really "home, sweet home;" and as a consequence, every thing will be attended to, his labourers will do their work more faithfully—the product of his fields be more abundant—his cattle and horses thrive, and give large returns to them—in a word, he becomes the lord of a little kingdom, and has every chance of being as happy as any man, and more so than any king.

Accidents from casualties and bad seasons, of course, he will experience, for this is the lot of humanity, but these will not readily cause him, in a fit of dissatisfaction to throw up his home and become a wander to the West. It may make him work harder, for a time, but it will cost him a long struggle both of labour and affection to be forced to give up his wedded home, which in a measure he should take as he does a wife, without the belief or the possibility of divorce. A struggle of this kind is seldom unsuccessful, before persevering and energetic efforts, particularly when they are urged by our affections, most difficulties disappear, and there are very few that will cost as many, and as much privation and suffering as a removal—to say nothing of emigration to a remote and still wild country. "Three removes are as bad as a fire," said the sagacious Dr. Franklin—and he adds—

> "I have seen the oft removed tree,
> Nor yet the oft removed family—
> That throve so well as they that settled be."

A good comfortable home, then, when once formed, we look upon as an anchor that holds fast the family, and carries with it affectionate recollections, even to the generations that follow.

Now let us reverse the picture and view it as it so frequently appears in the Southern country.

When about to engage in agriculture, it is usual for the owner of a piece of land, to set up a log-house in the roughest manner, often not large enough to accommodate the family, especially the female part of it, with the decency and privacy they require. It is usually not tight enough to exclude the wind, and as to sashed windows to admit light without being distressed by the rain and cold,—it is by no means remarkable to find the dwellings of decent families without them. The horses are in bad stables, the cattle absolutely houseless, and in very severe weather numbers of them perish. A farm-yard stercorary, is in consequence unnecessary—there is no accumulation of manure—nothing to revive the exhaustion that attends constant cropping. Such a house is far from being agreeable; no garden, no flowers bloom around it. The family would rather be any where else. The daughters educated abroad, shudder at returning to it. In the mean while the farmer or planter fancies he would do better elsewhere—it is, therefore, he thinks, useless to repair any thing. Year after year the buildings become worse, and at last, he is found on the road, with his family and slaves tracking to the far away West. The house is left to decay, the field to weeds, and form a scene which casts a melancholy over the whole neighbourhood.

While the justness of this picture will be admitted, it may be said that we are querulous in finding fault with a condition of things that results from want of means, surely this would be unreasonable, but we have seen numerous instances in which this excuse could not be made; where not only resources existed, but even a degree of wealth, and where but a small proportion of what is annually expended in absenteeship, would dress up the domicile with every comfort necessary to a country habitation. While we feel interested for the individual comfort of our countrymen, and particularly of our country women, we would rejoice, also to see, a plan adopted, which would do much towards retaining our population, or at least,

checking in a degree, the present tendency to emigration. The tracts of our country which suffer most from this cause, it will be remarked, are those that contain no other building material but wood. The cheapness of the buildings erected with it, makes them an object of small value, either in selling or purchasing, and by the custom of the country, the paradoxical inference seems admitted, that the value of the improvements are not to be considered in the purchase of a place. These views must be changed before our system of agriculture can be renovated. Brick is a material which can be made almost every where, and even when lime is difficult to be obtained, may be laid with clay in a very durable manner, for low buildings and country houses, ought not to be lofty; there is no necessity to economise ground as in cities, and to pile story upon story at a greatly increased expense, and with the loss of much space by entries and stair-cases. I remember to have heard it said, that in Kentucky, buildings of brick, gave at an early period, the assurance of that fine farming system, which has been realized int hat flourishing State. We know what the stone quarries of Pennsylvania have contributed towards the forming of, by far, the finest body of farmers in America. Let us, therefore, imitate these examples, as nearly as circumstances will permit, and our Southern land, blessed as it is, by the bounties of nature, will also become adorned by its agriculture, which should be called *par excellence* the *noblest art.*

SINCLAIR.

Experiments on manuring Corn—and on growing Potatoes and Corn together.

Charleston, Feb. 20, 1834.

To the Editor of the Southern Agriculturist.

Mr. Editor,—As the season for planting approaches, I will communicate the result of my experiments the last year upon manuring Indian corn, made on the Agricultural Society's Farm, called the "*Cattle Farm.*" The soil, (a light sandy one, and without manure) did not produce, when first planted by me four years ago, more than nine or ten bushels to the acre. Since which time, by the application of manure, it has gradually increased in quantity, to about twenty bushels. The last season the following trials were made: cow-pen compost, horse-litter

and fresh cotton-seed, were applied to the soil in the following manner: on the first of April the land was ploughed flush, then furrowed off four and a half feet apart with a bull-tongue plough; on a portion of the ground was strewed one peck of the first kind of manure to the task-row (105 feet), spread in the trench; a furrow was then run on each side with a common bar-share corn plough, covering the manure about four inches deep; the corn holes were then made with a dibble stick or pestle, two and a half feet from centre to centre, and two stalks were left to grow in each hill. The same quantity of the other kinds of manure were used, and in the same manner to two other portions of land. To three other portions, three pecks were applied, and to others four pecks. The result was to the first, 18 bushels to the acre; to the second, 19 bushels; the third, 21 bushels. The next trial was 19½, 22 and 25 bushels. The third was 21, 24 and 27 bushels. The fourth, was 23, 25 and 35 bushels.

To other portions of land the grain was planted without manure, and when about six inches high, the same quantity of manure of each of the aforenamed kinds, were applied to different portions around the hills; the yield of these were less in every instance. Again, when the corn was two feet high, similar proportions were used to other portions. The result was much the same as the last experiment; and again, when the corn had advanced to half its growth, the same trial was made to still other portions, when scarce any perceptible advantage was gained by the application. But to a part to which the same quantities of manure were used in the following manner, the result was nearly the same as the first class of experiments stated, to wit—when the corn was nearly a foot high, a furrow was run with a plough on each side of the bed, cutting away the foot, so as to expose the roots; the manure was then thrown in and immediately covered, by running a plough on the back of the furrow; in this experiment the bushel of cotton-seed produced at the rate of forty bushels per acre. The seed in all cases were fresh, and from being covered from four to five inches with earth did not vegetate.

I am inclined to think, from repeated experiments, that manure ought always to be applied to corn where the greatest number of the ends of the roots will enter it, therefore, I should say, that it were best to incorporate it

generally in the soil, as the roots pasture widely, even from four to five feet, if the soil is well pulverized, and well drained. I found it necessary to chop away a stock here and there, which put on an appearance of burning or drying up; except in those portions manured with cotton-seed which kept green.

I will add to this communication a method of growing corn and potatoes in the same field, which will be found highly advantageous, viz:—furrow off the ground in nine feet rows, plant the corn fifteen inches apart, on the row in single stalks, or thirty inches, leaving two stalks; as soon as vines can be procured, prepare the intermediate spaces between the corn-rows and plant them. The corn will shade the slips and cause them to take root more readily. The corn blades being soon after removed, the potato vines will run across to the corn rows and take root there, and produce potatoes which answer well for feeding stock, while the corn yields finely from its open stand.

Yours, &c.

J. F. O'HEAR.

N. B.—Corn planted 30th April.

On the Egyptian Oat, &c.

Alabama, March 1st, 1835.

To the Editor of the Southern Agriculturist.

Dear Sir,—Some few days ago, I was gratified through a friend, by a perusal of the last year's numbers, of your highly valuable work, and which, I am happy to find, is in no danger of being suppressed, notwithstanding the much to be lamented indisposition of its talented and patriotic original conductor.

Amongst other articles, I discover some information wanted, in No. 12, respecting the very valuable, "*Egyptian Oat.*" Having cultivated and used that article for several years, and each year with increased satisfaction, I feel myself called on to give the result of my experience of its value, if for no other reason, in part, as a liquidation of the debt I owe, for the pleasure and advantage I received from the perusal of the work beforementioned.

This oat may be sown as early as July, if pasturage is an object with the cultivator, and if put in when the ground is in a moist state, will come up well and grow off with rapidity. When about twelve inches in height, it is fit for

pasturage. By this time the roots have got a hold of the earth, sufficient to prevent the animal from drawing the plant out of the ground. It is a superior pasture for hogs, and admirable for young ones. Pigs may be taken from the sow, and they will not only thrive on the young oats, but will fatten on them. This grass appears to afford them a perfect substitute for the mother's milk. My plan, however, based on a strict economy, is to cut the oats with a a scythe at and above twelve inches in height, collect with a fine tooth-rake, and feed in a trough, in open, roomy, but under the cool shade of some trees, with about twelve grains of corn, each wetted and rubbed in fine salt, laid gently in the trough twice or thrice a week; once per week a little copperas is added—charcoal occasionally thrown into the frame, and a little rotten wood. In this way, I raised the finest hogs, and accumulate, with the aid of plenty of leaf-litter, a mass of manure. In fact, preferring the saving to the sluttish wasting plan, I prefer cutting for every animal to which I give the oat. I lose nothing, and the animal does well. It will be observed, that treating the oats in this way, prolongs the productive season for the use of animals nearly a month, as they may be kept regular over the field, that length of time, before suffered to start together to rise to maturity. They will not grow so tall, but head equally well. It will astonish any one on the first trial, what a small piece of ground will support a dozen pigs in this way. It will be observed, that as soon as other vegetables, agreeable to the hog, can be obtained, such as the under leaves of the cabbage, hog weeds, &c. ripe cucumbers, symblins, squashes, &c. they are added to the oats, the latter being the basis of the food.

After removing the oats from the ground without losing an hour, the field ought to be sown in the field-pea, and the stubble turned in. No practice will be found to secure a finer pea-crop. If the Tory-pea, red or black, is selected, a most admirable winter forage for the pigs is secured, and a course taken, the happiest, for the amelioration or improvement of the land, and for which latter reason, as well as to secure a pea-crop, the stubble is recommended to be turned in, while in the best state, to produce that effect. In saving the Egyptian oat for feeding, it ought to be cut just before coming ripe, and stacked as soon as possible, sprinkling, on stacking, salt over every layer of

sheaves. When feeding, by all means, subject them in the sheaf to the cutting box, if for horses, or mules, and a tin cup of Indian corn-meal, or rye, to each animal, per day, over as much of the oats as the animal can eat, will keep the best conditioned animal for labour and life, free from disease, &c. He will shew more action—less perspiration in hot weather—finer hair than the one that is burnt up in the feverish diet of corn and fodder. In feeding with cut oats, which I prefer, as a basis for horse-feed, over all other productions, I cut up, and add fodder, Gama-grass green, or if not, common crab-grass, green fodder, and occasionally the hog-weeds, and small twigs and leaves of the china-tree, or mulberry. Of the green food, in working season, I add but small quantities, but that small quantity I view of immense importance, in preserving a healthy action of the bowels. One bundle of rice-straw and rice, cut up together, I never neglect with the oat. In this mode of feeding, the Egyptian oats may be used to a superior advantage—as an article of horse-feed, and grain for hogs and mules. For horned cattle, rye is certainly superior, as also for suckling sows and calves—as green food for oxen it is better.

Land that will bring any oat, will produce equally the Egyptian. An additional value of the oat crop is, that it will come off in time to secure another singularly valuable, if rightly managed, the pea-crop. As soon as they are fit for pulling up and curing, let it be done, and when nearly cured, carried home and stowed away in a rail pen, as follows. Strew a little well dried oat, rye, or rice-straw in the bottom, which should be tight, on which lay a layer of pea-vines, which when pressed down by the feet of children, will be about twelve inches thick; on this give a liberal sprinkling of salt, then straw, pea-vines and salt, until the pen is full. A good floor will save the salt and peas that may go to the bottom in taking out to feed, and a roof of clap-boards from rains, until fed away. The pea-vines preserved in this way, cannot be excelled for winter forage, except when steamed, after being cut in the box. The pea-vines give to the straw additional value. On commencing the pile, place a keg in the centre, and build round it, drawing it up, as the stacking goes on. This will leave a hole in the middle for the air to enter, and the gass that may generate to escape.

CINCINNATUS.

On the Management of Peach Trees.

(Continued from page 136.)

Mr. Editor,—The next enemy calculated very much to injure the tree, and prevent its bearing, are very small brown insects called *Aphides*, these commence their depredations by collecting in great clusters, upon the early shoots, occasioning the young and tender leaves to curl up, and finally to die, depriving the tree of that portion of nourishment, which it derives from the atmosphere through its leaves; they prefer young to old trees, and the ends of the branches of the new wood, to those of more maturity. I have known a moderate sized tree in the course of a few days literally covered with them, and all its foliage and blossoms entirely destroyed, the tree survived, but bore no fruit even the succeeding year. To counteract the depredations of this insect, vinegar is said to be a very powerful application. I have generally succeeded before the evil progressed too far by saturating a common bottle of lime-water with corrosive sublimate, and with a small painter's brush, applied the mixture to their several groups, which instantly destroyed them; Nay, so delicate are they, that the slightest pressure of the brush upon them, would destroy them, although during the late severe weather, I saw them upon the body of a small tree entirely encrusted in ice for days without sustaining any injury.

The insects I have described, injure the fruit by their attacks upon the tree. There is one class, however, that depredate immediately upon the fruit, called the *Curculio*, a species of weevil of the order *Coleoptera* of this genus from 800 to 1000 species have been enumerated, and it is believed that many have escaped observation. Among these are to be found the various insects that infest granaries, eating their way into grains of corn, leaving nothing but the husk, they are to be found in other seeds, in the inside of artichokes, thistles, and other plants, also in various kind of nuts, as chesnuts, hazlenuts, &c. The *Curculio*, perhaps, the most destructive of all insects to fruit may be described in common parlance as a very small winged beetle that emerges from its chrysalis state, about the time of the early formation of the fruit in spring; they

crawl up the tree, being rather awkward on the wing, when in sufficient numbers they deposit an egg in each fruit, preferring in all cases, the smooth skin to the rough. This egg soon hatches, and the *larva*, feeding on the fruit in process of time, occasions it drop, the worm immediately descends into the earth, and becomes a chrysalis; remaining in that state during the whole winter, it becomes converted into a *Curculio*, ready prepared for fresh depredations. So reluctant are they to use their wings, that Dr. Tilton states, that two trees standing so near to each other as to touch, the fruit of one was destroyed whilst that of the other escaped. I can vouch for a similar circumstance in relation to my own trees.

Amongst the many remedies proposed for this evil, the most important, are those which are calculated to prevent the *larvæ* from passing into the chrysalis state. In large orchards, hogs are invaluable, for as soon as a fruit falls, it is eaten up by them, thus preventing the worms from passing in the earth. In small orchards, a peach that has fallen should immediately be picked up, and the worm contained in it destroyed; in these, poultry should be freely admitted as they would invariably seek for the hidden worm in the fallen fruit. The most effectual method, however, to guard against the evil I am speaking of, is to pave the ground, I do not mean as some do, lay a few bricks without mortar around a tree, this is useless. The yard or ground, must be substantially paved with brick and mortar, or rammed with dead oyster shells, so as to present a hard surface. The utility of this expedient is very apparent; for when the fruit falls, and the worm leaves its habitation in search of winter quarters in the earth, its progress will be arrested by the impervious nature of the surface, and its destruction rendered certain. This could not be effected unless the pavement extended beyond the outer branches of the tree, for it is evident, the pavement could not protect the tree against those worms that should fall beyond its range. In paving, the ground should be previously well manured. Dr. Tilotson remarks, that in paved ground the trees may be set very close, the excess of rain being carried off by the pavement, and their luxuriance being thus restrained, such trees must not only produce great crops, but from the effect of the sun on the naked pavement, the fruit must be of the finest quality.

With regard to pruning peach trees, a great diversity of opinion exists as to the proper time when this operation should be performed, some being of opinion that the spring previous to the buds issuing forth is the proper season, whilst others maintain that this work should be done in the summer. Trimming, which is an operation confined to the removal of the small unproductive or imperfect branches, and cutting down the bearing shoots to five or more eyes, according to their strength, should be performed in the spring, and on this point most agree. The operator at this season should remove all the bearing twigs of the last year, by cutting them smooth and close to the parent stem, for these having performed their office have become useless, encumber the tree, and being sustained in common with the whole, deprive other and more useful parts from a portion of sap. The branches that put forth the last year, should be shortened down to from three to five eyes, according to their vigour, more buds being allowed to strong than weak shoots. In this part of the operation, care must be taken that a cut is made at a wood bud, and not a leaf or flower bud, for if cut at either of the latter, the shoot will invariably die down to the former. The wood bud, which is to give the bearing shoot for the next year, may be known by being smaller than the others and pointed, the others are rounded, the flower buds being the largest. Those who cannot discriminate between the different buds, may confine themselves to where they see two round buds side by side, a wood bud is always between them, though sometimes scarcely discernable. All shorts and small branches that project beneath a horizontal limb, should be removed. All shoots that cross each other, and the sterile or weak shoots that pervade the centre of the tree, should not be permitted to remain, as they prevent a free circulation of air and divert nourishment from the fruit.

The pruning of a tree consists in removing those larger branches, that yield little or no fruit, or those which are defective, also those that have been injured by wind shakes, or otherwise, or become deformed and unsightly, great care being taken to saw them off close to the trunk, and cutting the face of the wound and edges of the bark smooth with a very sharp knife, it should then be covered with a paste made of fresh cow-dung and clay, tied on with a

piece of cloth, this is to guard it from the drying influence of the sun and atmosphere, to prevent it from absorbing the rain, which would tend to produce rottenness in the wound and subsequent canker in the tree. The time when this operation ought to take place, has not yet been decided. Mr. Jefferson was of opinion, that both trimming and pruning ought to be performed when the tree is in full foliage and blossom, because the operator has a chance of selecting those branches that have sterile blossoms and removing them, and that in consequence, of the sap vessels of the tree being in active operation, nature makes an effort by supplying proper nourishment to the wounds immediately to heal them; whereas to operate whilst these vessels are in a dormant state, there is no disposition on the part of the tree to heal, and by the time the sap becomes active, the wound and bark around it will become hard and dry and incapable of healing, thus leaving shelter to various insects that find a ready abode for their incursions upon the tree and fruit. Many, on the contrary, condemn this summer pruning, alleging that the tree becomes exhausted by the sap oozing out from the incisions necessarily made, and its general health affected, this, however, appears to me, to be readily obviated by applying the paste above recommended. As relates to myself, I shorten the small branches in the spring at the time the buds are swelling, leaving the larger ones until the tree has ceased bearing for that year. I have found no evil to result from this method. If proper attention is paid to a tree from the time it is first planted, the small branches may be removed at any season; but when a tree is suffered to remain for many years without trimming, this undoubtedly should be done in the spring—not being wedded to any particular system on this subject, I have not made up my mind on that of summer pruning; there are some plausible arguments against it, but that which is plausible is not always true, and where experiments may be made with so much ease, it is surprising that they are not made, or if made are not communicated to the public—this lukewarmness on the part of agriculturists is very reprehensible and injures the country by retarding the progress of improvement. There is no point connected with this subject that is too insignificant for communication, extensive results frequently arise from the most trivial causes, and thus it is with the subject under discussion.

we have the opinions and theories of men, without a single one of them saying that he has with trees in all respects equal, tried the two systems, and found the one more successful than the other, and pointing out wherein the superiority existed, and such peculiarities as would necessarily suggest themselves to the intelligent farmer. This would be worth a whole volume of speculation.

A very intelligent farmer, Mr. Wheeler of Framingham, is opposed to summer pruning *in toto*. He thinks the only plausible reason urged is, that the wounds heal over sooner, than if cut in the fall or winter, but that the objection to fall and winter pruning in consequence of the wounds not healing, and thereby injuring the tree, may be obviated by covering them with any composition calculated to secure them against the operation of the sun and atmosphere. That any considerable number of branches cut from a tree, when full of sap, destroys so much of the nourishment of the tree. That the sap of trees is drawn from the ground by the fibres of the roots, and ascends to the extremities of every twig, a part of which contributes to the growth of the leaves, blossoms and fruit; the remainder returns between the bark and the trunk, and forms a new growth around every branch, and likewise the roots; and that if the limbs are removed when they are full of sap, we destroy so much of the nourishment. The *rationale* here is true as to the physiological operation of the sap; but I do not admit, that its operations would be affected in the manner stated; because, supposing a limb sawed off close to the body of the tree, it is evident that a quantity of sap equal to what is contained in the limb, may be dispensed with by the tree, so far as the leaves, fruit and growing wood on it are concerned; the roots will continue to draw the same quantity so long as they have the same number of vessels or mouths, which quantity will be sent to nourish the remainder of the tree; but it is stated that the bleeding of the wound will exhaust the tree; this would be true if the sap circulated with the rapidity that the blood does in the human system, a wound would soon exhaust it, but the truth is, the motion of the sap is imperceptible, it is a moist substance which pervades the whole tree, and from whence the different vessels dispense nourishment, which by some peculiar and hidden chemical process becomes converted into leaves, blossoms and fruit, after which it hardens and forms another layer of wood

on the roots, trunk and limbs of the tree. Let any one saw off a moderate sized limb of a peach tree, and he will just see moisture around the junction of the bark with the wood, he will not see it exuding in the quantity it does from the grape-vine. If the wound be left to itself, it will soon become dry, and the edges covered with gum, the sap collected by the roots will quietly pass on, and perform its accustomed duty. The wound, however, should always be taken care of, and not exposed to the influence of the weather, the healing process will soon commence around the edges of the bark, and in a reasonable time, according to the size of it, the wound will be entirely healed and covered with new bark.

The most approved method of planting out peach trees, and which was adopted by the late Mr. Parmentier, of Brooklyn, New-York, one of the most indefatigable and successful agriculturists in this country, is the following. "A hole from three to four feet broad should be made. Sods of about three inches in thickness, cut fine with the spade, should be put in the hole to the depth of two feet, and covered with about one inch of good earth. Then put in the tree and cover the roots with loose mellow earth or vegetable mould. If the tree is planted too deep, it will vegetate poorly, and must perish at length without producing but poor fruit."

The trees should be planted about two inches below the juncture of the upper roots with the trunk of the tree. Peach trees will grow in any soil, but delight most in a rich sandy loam. I have seen them grow very luxuriantly in the poor, dry, sandy land in our low country. They should be planted fifteen feet asunder, at least, and the earth sifted in the hole, so that every root and fibre if possible should be covered. No water should be applied. In planting, the roots should be examined, and every one that is broken or injured should be removed. If they have been out of the ground any time, and become dry, they should be soaked in water at least twelve hours previous to the planting. If the tree is to be planted where a dead one has been removed, it is indispensable that every root and fibre of the dead tree should be feretted out, this is more important than many persons suppose. The proper season for planting peach trees is from the time they drop their leaves, in the fall, to that of the spring, when the buds exhibit life. The earlier, however, a tree is planted, the better.

PERSICO.

Catalogue of Phænogamous Plants, and ferns native or naturalized found growing in the vicinity of Charleston, (S. C.); by J. BACHMAN.

THE compiler of this catalogue has confined himself to a notice of such plants growing within nine miles of Charleston, as he has either collected himself, or received from his friends, on whom perfect reliance could be placed. He has no doubt, that the farther researches of Botanists will add considerably to the list.

As Elliott's Botany gives the best description of these plants, there has been a general reference to his nomenclature. Where important changes in the genera have been made by botanists of distinction, since the publication of that invaluable work, they have been noticed in this catalogue. A few plants overlooked by the lamented Elliott have been added to this list, as well as a few exotics which may now be said to be fairly naturalized around Charleston. The compiler will esteem it a favour if others will assist him in correcting the errors into which he may inadvertently have fallen, and he hopes that this attempt to bring to the notice of students of botany, the Flora by which our city is surrounded, may incite them to pursue and reap pleasure and profit from this interesting study.

A.

Acalypha virginica *L*
Acer rubrum *L*
Aesculus pavia *L*
Achillea millefolium *L*
Achyranthes ficoidea *Pers.*
" repens *Ell.*
Acmella repens *Ell.*
Acorus calamus *L*
Agave virginica *L*
Agrimonia eupatoria *L*
Agrostis alba *L*
" decumbens *Muhl.*
(variety of the above.)
" indica *L*
" juncea *Mich.*
" sericea *Muhl.*
(Trichochloa capillaris) *d'Candole*
Agrostis trichopodes *Ell.*
(Trichochloa trichopodes) *Leit.*
" virginica *L*
Aira obtusata *Ell.*
(Koelerra Obtusata) *Leit.*
Aira pallens *Muhl.*
(Trisetum palustre) *Torr.*
Aletris aurea *Walt.*
" farinosa *L*
Allium striatum *Pursh.*
Alnus serrulata *Ait.*
Alopecurus geniculatus *L*
Amaryllis atamasco *L*
Ammania humilis *Mich.*
" ramosior *L*
Ambrosia paniculata *Mich.*
Amaranthus lividus *L*
" pumilus *Nutt.*

Amaranthus hybridus *L*
" spinosus *L*
" sanguineus *L*
Ammi capillaceum *Sprong.*
(Discopleura capillacea) *d'Candole*
Amphicarpa sarmentosa
Amorpha fruticosa *L*
" pubescens *L*
Andromeda angustifolia *Pursh.*
" ferruginea *L*
" ligustrina *Muhlb.*
" mariana *Mulb.*
" nitida *Walt.*
" racemosa *Mich.*
" rigida *Pursh.*
" speciosa *Mich.*
Anemone virginiana *L*
Andropogon ambiguus *Mich.*
(Gymnopogon racemosum)
P. de Beauv.
" argenteus *Ell.*
" macrourus *Mich.*
" nutans *L*
" scoparius *Mich.*
" tetrastachyus *Ell.*
" vaginatus *Ell.*
" virginicus *L*
(A. dissitiflorus) *Mich.*
Anthemis cotula
Antirrhinum canadense *L*
Anthoxanthum odoratum *L*
Apocinum androsæmifolium *L*
" cannabinum *L*
" pubescens *Brown.*
Apios tuberosa *Moench.*
Aralia spinosa *L*
Arenaria canadensis *Pers.*
" diffusa *Ell.*
" glabra *Michx.*
" serpyllifolia *L*
Argemone mexicana *L*
Aristida gracilis *Ell.*
" lanosa *Muhl.*
" spiciformis *Ell.*
" stricta *Mich.*
Aristolochia serpentaria *L*
Aronia arbutifolia *Ell.*
(pyrus) *L*
Arundinaria macrosperma *Mich.*
Arnica nudicaulis *Mich.*
Arum triphyllum *L*
" virginicum *L*
(Rensellaeria virginica) *Beck.*
Asarum arifolium *Mich.*
Asclepias amplexicaulis *Mich.*
" incarnata *L*
Ascyrum pumilum *Mich.*
" crux andreae *L*
" hypericoides *L*
Asimina triloba *D'C.*
Asparagus officinalis *L*
Aspidium acrostichoides *W*
" noveboracense *W*
" asplenioides *W*
Asplenium ebeneum *W*
" trichomanes *L*
" Ruta muraria *L*
Aster amplexicaulis *L*
" carolinianus *Walt.*
" concolor *L*
" divergens *Ait.*
" flexuosus *Nutt.*
" junceus *Ait.*
" linarifolius *L*
" multiflorus *Ait.*
" obovatus *Ell.*
(Chrysopsis obovata) *Nutt.*
" paludosus *L*
" reticulatus *Pursh.*
" scaber *Ell.*
" solidaginoides *Mich.*
" sparsiflorus *Mich.*
" squarrosus *Walt.*
" subulatus *Mich.*
" tortifolius *Mich.*
" undulatus *L*
Atriplex arenaria, *Nutt.*
Aulaxanthus ciliatus *Ell.*
" rufus *Ell.*

Azalea canescens *Mich.*
" nudiflora *L*
(Rhododendron nudiflorum) *Torr.*
" viscosa *L*

B.

Baccharis angustifolia *Mich.*
" halimifolia *L*
" sessiliflora *Mich.*
Betula nigra *L*
Bidens bipinnata *L*
" chrysanthemoides *Mich.*
Bignonia capreolata *L*
" radicans *L*
Baptisia alba *Ell.*
" tinctoria *Ell.*
" perfoliata *Ell.*
Bletia aphylla *Nutt.*
Boehmeria cylindrica *W.*
Borkhausia caroliniana *Nutt.*
Botrychium virginicum *Swartz.*
Brasenia peltata *Pursh.*
(Hydropeltis purpurea) *Mich.*
Briza eragrostis *Mich.*
Buchnera americana *L*
Bumelia lanuginosa *Mich.*
" lycioides *Ell.*
" tenax *B*
Buphthalmum frutescens *L*

C.

Cacalia atriplicifolia *L*
Cactus opuntia *L*
(Cactus fragilis) *Nutt.*
Cakile americana *Nutt.*
Callicarpa americana *Mich.*
Callitriche heterophylla *Pursh.*
(A Callitriche var. intermedia) *W.*
Calopogon pulchellus *Brown.*
Calopogon pinetorum* *Leitn.*
Campanula amplexicaulis *Mich.*
Canna flaccida *Roscoe.*
Caprifolium sempervirens *Mich.*
Cardamine pennsylvanica *Muhl.*
Cardiospermum halicacabum *L*
Carex anceps *Muhlb.*
" bromoides *Schk.*
Carex caespitosa *L*
" conoidea *Schk.*
" crinita *Lam.*
" festucacea *Schk.*
" flexuosa *Muhlb.*
" folliculata *L*
" furcata *Ell.*
(Carex Pseudo cyperus) *L*
" gigantea *Rudge.*
" glaucescens *Ell.*
" leporina *L*
" lupulina *Muhlb.*
" muhlenbergii *Schk.*
" pellita *Muhlb.*
" anceps *Muhlb.*
" riparia *Muhl.*
(C. lacustris) *W.*
" scirpoides *Schk.*
" scoparia *Schk.*
" sterilis *W.*
" stipata *Muhlb.*
" tentaculata *Muhlb.*
" triceps *Ell.*
(Carex viridula) *Mich.*
" varia *Muhlb.*
" vestita *W.*
Carpinus americana *W.*
Carya porcina, *Nutt.*
" sulcata *Nutt.*
" tomentosa *Nutt.*
Cassia aspera *Muhl.*
" chamaechrista *L*
" fasciculata *Mich.*
" ligustrina *L*
" linearis *Mich*
" marylandica *L*
" nictitans *L*
" occidentalis *L*
" tora *L*
Castanea nana *Muhlb.*
" pumila *W.*
Catalpa cordifolia *Ell.*
Ceanothus americanus *L*
Celtis occidentalis *L*
Cenchrus echinatus *L*

* Note in our next.

Cenchrus tribuloides *L*
Centaurea benedicta *L*
Centaurella paniculata *Mich.*
" verna *Mich.*
Cephalanthus occidentalis *L*
Cerastium hirsutum *Muhl.*
(C. connatum) *Beck.*
" viscosum *L*
Cercis canadensis *L*
Ceresia fluitans *Eli.*
Chamærops histrix *Fraser.*
" palmetto *Mich.*
Chaptalia integrifolia *Mich.*
Chelone glabra *L*
Chærophyllum procumbens *Lam.*
Chenopodium album *L*
" ambrosioides *L*
" anthelminticum *L*
Chimaphila maculata *Pursh.*
(Pyrola maculata) *L*
Chionanthus virginica *Walt.*
Chloris petræa *Mich.*
Chrysanthemum leucanthemum *L*
Chrysogonum virginianum *L*
Chrysopsis argentea *Persoon.*
" graminifolia *Nutt.*
" mariana *Nutt.*
" scabra *Pursh.*
" trichophylla *Nutt.*
Cicuta maculata *L*
Clethra alnifolia *L*
" tomentosa *La Marck.*
Clematis crispa *L*
" virginiana *L*
Cleome pentaphylla
Clitoria mariana *L*
" virginiana *L*
Cnicus glaber *Nutt.*
" horridulus *Pursh.*
" repandus *Mich.*
" virginianus *Pursh.*
Commelina communis *Pursh.*
" erecta *L*
" virginica *L*
Conostylis americana *Pursh.*
(Lophiola aurea) *Ker.*
Conyza marylandica *Mich.*
" camphorata *Pursh.*
" bifrons *L*
" sinuata *Ell.*
Convolvulus macrorhizus *Ell.*
" obtusilobus *Mich.*
" purpureus *Walt.*
" sagittifolius *Mich.*
" tenellus *L*
Corchorus olitorius *L*
Cornus florida *L*
" stricta *L'Herit.*
Coreopsis auriculata *L*
" crassifolia *Ait.*
" lanceolata *L*
" mitis *Mich.*
" gladiata* *Walt.*
" rosea *Nutt.*
" verticillata *L*
Coronopus didyma *Pursh.*
Crataegus apiifolia *Mich.*
" crus galli *L*
" elliptica *L*
" parvifolia *L*
" viridis *L*
Croton glandulosum *L*
" marttimum *L*
Cucurbita lagenaria *L*
Cupressus disticha *L*
Cuscuta americana *L*
Cyamus luteus *Nutt.*
(Nelumbium luteum) *W.*
Cyperus articulatus *L*
" autumnalis *Pursh.*
" brizæus *Richard.*
" compressus *L*
" distans *L*
" flavescens *L*

* This species varies very much in size, and forms a number of specimens collected along the borders of Synebel river, in East Florida. I come to the conclusion, that the Coreopsis augustifolia of Ait, and C. gladiata of Walt, are identical.

Cyperus flavicomus *Mich.*
" gracilis *Muhl.*
" hydra *Mich.*
" nutallii *Torr.*
" odoratus *L*
" repens *Ell.*
(C. phymatodes) *Muhlb.*
" speciosus *Pursh.*
" strigosus *L*
" tenuiflorus *L*
" virens *Mich.*
Cyrilla racemiflora *Walt.*

D.

Datura stramonium *L*
" tatula *L*
Daucus carota *L*
" pusillus *Mich.*
Decodon verticillatum *Ell.*
Decumaria sarmentosa *L*
Dichondra carolinensis *Mich.*
Dichromena latifolia *Bald.*
" leucocephala *Mich.*
Digitaria dactylon *Muhlb.*
(cynodon dactylon) *Pers.*
" filiformis *Ell.*
" sanguinalis *Scop.*
" villosa *Ell.*
(D. serotina) *Mich.*
Diodia hirsuta *Pursh.*
" tetragona *Walt.*
Dioscorea quaternata *Walt.*
" villosa *L*
Diospyros virginiana *L*
Draba caroliniana *Walt.*
Dracocephalum variegatum *Ventenat.*
Dulichium spathaceum *Pers.*

E.

Echites difformis *Walt.*
Eleusine cruciata *Ell.*
" indica *Mich.*
" mucronata *Mich.*
Eclipta brachypoda *Mich.*
" erecta *L*
" procumbens *Mich.*
Elephantopus carolinianus *W.*
" nudicaulis *Ell.*
Elodea petiolata *Walt.*
" virginica *Nutt.*
Elymus histrix *L*
" virginicus *L*
Erianthus alopecuroides *Ell.*
" brevibarbis *Mich.*
" contortus *Bald.*
Erigeron canadense *L*
" nudicaule *L*
" nudicaule *Mich.*
" philadelphicum *L*
" strigosum *L*
Eriocaulon decangulare *Mich.*
" flavidulum *Mich.*
" gnaphalodes *Mich.*
" villosum *Mich.*
Eriophorum virginicum L
Eryngium aquaticum L
" fætidum L
Erythrina herbacea L
Eupatorium album L
" coelestinum L
" coronopifolium *Ell.*
" cuneifolium *Wild.*
" fœniculaceum L
" glaucescens *Ell.*
" hyssopifolium L
" incarnatum *Walt.*
" linearifolium *Walt.*
" maculatum L
" parviflorum *Ell.*
" perfoliatum L
" purpureum L
" rotundifolium L
" scabridum *Ell.*
" serotinum *Mich.*
" ternifolium *Ell.*
Euphorbia corollata L
" cyathophora *Murrs.*
" depressa *Torr.*
" hypericifolia L
" maculata L
" polygonifolia L

Evonymus americanus L

F.

Fraximus acuminata *Lam.*
" platycarpa *Mich.*
" pubescens *Walt.*
Fedia radiata *Mich.*
(valerianella radiata) *D'C.*
Festuca myurus L
" tenella *W.*
Fothergilla alnifolia L.
Fuirena squarrosa *Mich.*

G.

Galactia glabella *Mich.*
" mollis *Mich.*
" pilosa *Nutt.*
Galium circæzans *Mich,*
" hispidulum *Mich.*
" pilosum *Ait.*
" trifidum L
" uniflorum *Mich.*
Gaura angustifolia *Mich.*
Gelseminum sempervirens *Juss.*
Gentiana angustifolia *Mich.*
" Catesbæi *Walt.*
" ochroleuca *W.*
" saponaria L
Geranium carolinianum L
Gerardia fasciculata *Ell.*
" flava L
" linifolia *Nutt.*
" pedicularia L
" purpurea L
" quercifolia *Pursh.*
(G. glauca) *Eddy.*
" setacea *Pursh.*
" tenuifolia L
Gleditschia triacanthos L
Glycine erecta *Walt.*
(Orynchosia erecta
" simplicifolia do. *Walt.*
" tomentosa do. L
Gnaphalium margaritaceum L
" polycephalum *Mich.*
" purpureum L
Gonolobus caroliniensis *Ell.*
(G. hirsutus) *Mich.*
Gonolobus macrophyllus *Mich.*
Gordonia lasianthus L
Gratiola acuminata *Walt.*
" aurea *Mulb.*
" megalocarpa *Ell.*
" pilosa *Mich.*
" quadridentata *Mich.*
" sphaerocarpa *Ell.*
" tetragona *Ell.*
" virginica L
Gymnostyles stolonifera *Nutt.*

H.

Habenaria michauxii *Nutt.*
" repens *Nutt.*
Halesia tetraptera L
Hamamelis virginica L
Hedyotis glomerata *Ell.*
Heliotropium curassavicum L
Helianthus angustifolius L
" aristatus *Ell.*
" atro-rubens L
" mollis *W.*
Heliopsis lævis *Pers.*
Helonias angustifolia *Mich.*
" dioica *Pursh.*
" erythrosperma *Mich.*
Herpestis amplexicaulis *Pursh.*
" cuneifolia *Pursh.*
Hibiscus moscheutos L
" speciosus *Ait.*
" virginicus L
Hieracium gronovii L
" venosum L
Hopea tinctoria L
Houstonia patens *Ell.*
" rotundifolia *Mich.*
Humulus lupulus L
Hydrocharis spongiosa *Bosc.*
Hydrocotyle cymbalarifolia *Muhlb*
" interrupta *W.*
" repanda *Pers.*
" umbellata L
Hypericum angulosum L
" canadense L
" fasciculatum *M*

Hypericum nudiflorum *Mich.*
" parviflorum *W.*
" pilosum *Walt.*
" rosmarinifolium L
" simplex *Mich.*
Hypoxis erecta L
Hyptis radiata L

I.

Ilex cassena *Walt.*
" opaca *Ait.*
Illicium parviflorum *Mich.*
Indigofera caroliniana *Walt.*
Impatiens noli-tangere *Pursh.*
(T. pallida) *Nutt.*
Ipomaea lacunosa L
(convolvulus) *Spreng.**
" nil *Pursh.*
(convolvulus nil L
" trichocarpa do. *Mich.*
Iresine celosioides L
Iris versicolor L
Itea virginica L
Iva frutescens L
" imbricata *Walt.*

J.

Jatropha stimulosa *Mich.*
Juglans nigra L
Juncus acuminatus *Mich.*
" acutus L
" aristatus *Mich.*
" biflorus *Ell.*
" bufonius L
" dichotomus *Ell.*
(L. bulbosus) L
" echinatus *Muhl.*
" effusus L
(L. comunis Meyer var effusus)
" repens *Mich.*
" tenuis *W.*
Juniperus virginiana L
Jussieua grandiflora *Mich.*
Justicia humilis *Mich.*

K.

Kalmia hirsuta *Walt.*
Krigia caroliniana *Nutt.*
(Cynthia) *Leitn.*
" virginica L
(Cynthia) *Beck.*
Kyllingia monocephala L
" pumila *Mich.*

L.

Lactuca elongata *Muhlb.*
" graminifolia *Mich.*
Lamium amplexicaule L
Laurus æstivalis L
" carolinensis *Mich.*
" geniculata *Walt;*
" melissæfolia *Walt.*
" sassafras L
Lechea major *Mich.*
" racemulosa *Mich.*
Leersia oryzoides *Swartz.*
Lemna minor L
Leontodon taraxacum L
Leonurus cardiaca L
Lepidium virginicum L
Lespedeza augustifolia *Ell.*
" hirta *Ell.*
" polystachya †*Mich.*
" procumbens *Mich.*
" prostrata *Pursh.*
" stuvei *Nutt,*
" violacea *Pers.*
Lepuropetalon spathulatum
Muhl
Liatris cylindracea *Mich.*
" elegans L
" gracilis *Pursh.*
" graminifolia *Walt.*
" odoratissima *Walt.*
" paniculata *Walt.*
" pilosa *W.*
" pycnostachya *Mich.*
" resinosa *Nutt.*

* I concur with Sprengel and Beck in uniting Ipomaea with Convolvulus, the simple stigma is a character too unimportant for generic distinction.

† Note in our next number.

Shaw's berry June?

Evonymus americanus L

F.

Fraximus acuminata *Lam.*
" platycarpa *Mich.*
" pubescens *Walt.*
Fedia radiata *Mich.*
(valerianella radiata) *D'C.*
Festuca myurus L
" tenella *W.*
Fothergilla alnifolia L.
Fuirena squarrosa *Mich.*

G.

Galactia glabella *Mich.*
" mollis *Mich.*
" pilosa *Nutt.*
Galium circæzans *Mich,*
" hispidulum *Mich.*
" pilosum *Ait.*
" trifidum L
" uniflorum *Mich.*
Gaura angustifolia *Mich.*
Gelseminum sempervirens *Juss.*
Gentiana angustifolia *Mich.*
" Catesbæi *Walt.*
" ochroleuca *W.*
" saponaria L
Geranium carolinianum L
Gerardia fasciculata *Ell.*
" flava L
" linifolia *Nutt.*
" pedicularia L
" purpurea L
" quercifolia *Pursh.*
(G. glauca) *Eddy.*
" setacea *Pursh.*
" tenuifolia L
Gleditschia triacanthos L
Glycine erecta *Walt.*
(Orynchosia erecta
" simplicifolia do. *Walt.*
" tomentosa do. L
Gnaphalium margaritaceum L
" polycephalum *Mich.*
" purpureum L
Gonolobus caroliniensis *Ell.*
(G. hirsutus) *Mich.*
Gonolobus macrophyllus *Mich.*
Gordonia lasianthus L
Gratiola acuminata *Walt.*
" aurea *Mulb.*
" megalocarpa *Ell.*
" pilosa *Mich.*
" quadridentata *Mich.*
" sphaerocarpa *Ell.*
" tetragona *Ell.*
" virginica L
Gymnostyles stolonifera *Nutt.*

H.

Habenaria michauxii *Nutt.*
" repens *Nutt.*
Halesia tetraptera L
Hamamelis virginica L
Hedyotis glomerata *Ell.*
Heliotropium curassavicum L
Helianthus angustifolius L
" aristatus *Ell.*
" atro-rubens L
" mollis *W.*
Heliopsis lævis *Pers.*
Helonias angustifolia *Mich.*
" dioica *Pursh.*
" erythrosperma *Mich.*
Herpestis amplexicaulis *Pursh.*
" cuneifolia *Pursh.*
Hibiscus moscheutos L
" speciosus *Ait.*
" virginicus L
Hieracium gronovii L
" venosum L
Hopea tinctoria L
Houstonia patens *Ell.*
" rotundifolia *Mich.*
Humulus lupulus L
Hydrocharis spongiosa *Bosc.*
Hydrocotyle cymbalarifolia *Muhlb*
" interrupta *W.*
" repanda *Pers.*
" umbellata L
Hypericum angulosum L
" canadense L
" fasciculatum *M*

Hypericum nudiflorum *Mich.*
" parviflorum *W.*
" pilosum *Walt.*
" rosmarinifolium L
" simplex *Mich.*
Hypoxis erecta L
Hyptis radiata L

I.

Ilex cassena *Walt.*
" opaca *Ait.*
Illicium parviflorum *Mich.*
Indigofera caroliniana *Walt.*
Impatiens noli-tangere *Pursh.*
(T. pallida) *Nutt.*
Ipomaea lacunosa L
(convolvulus) *Spreng.**
" nil *Pursh.*
(convolvulus nil L
" trichocarpa do. *Mich.*
Iresine celosioides L
Iris versicolor L
Itea virginica L
Iva frutescens L
" imbricata *Walt.*

J.

Jatropha stimulosa *Mich.*
Juglans nigra L
Juncus acuminatus *Mich.*
" acutus L
" aristatus *Mich.*
" biflorus *Ell.*
" bufonius L
" dichotomus *Ell.*
(L. bulbosus) L
" echinatus *Muhl.*
" effusus L
(L. comunis Meyer var effusus)
" repens *Mich.*
" tenuis *W.*
Juniperus virginiana L
Jussieua grandiflora *Mich.*
Justicia humilis *Mich.*

K.

Kalmia hirsuta *Walt.*
Krigia caroliniana *Nutt.*
(Cynthia) *Leitn.*
" virginica L
(Cynthia) *Beck.*
Kyllingia monocephala L
" pumila *Mich.*

L.

Lactuca elongata *Muhlb.*
" graminifolia *Mich.*
Lamium amplexicaule L
Laurus æstivalis L
" carolinensis *Mich.*
" geniculata *Walt;*
" melissæfolia *Walt.*
" sassafras L
Lechea major *Mich.*
" racemulosa *Mich.*
Leersia oryzoides *Swartz.*
Lemna minor L
Leontodon taraxacum L
Leonurus cardiaca L
Lepidium virginicum L
Lespedeza augustifolia *Ell.*
" hirta *Ell.*
" polystachya †*Mich.*
" procumbens *Mich.*
" prostrata *Pursh.*
" stuvei *Nutt,*
" violacea *Pers.*
Lepuropetalon spathulatum
Muhl
Liatris cylindracea *Mich.*
" elegans L
" gracilis *Pursh.*
" graminifolia *Walt.*
" odoratissima *Walt.*
" paniculata *Walt.*
" pilosa *W.*
" pycnostachya *Mich.*
" resinosa *Nutt.*

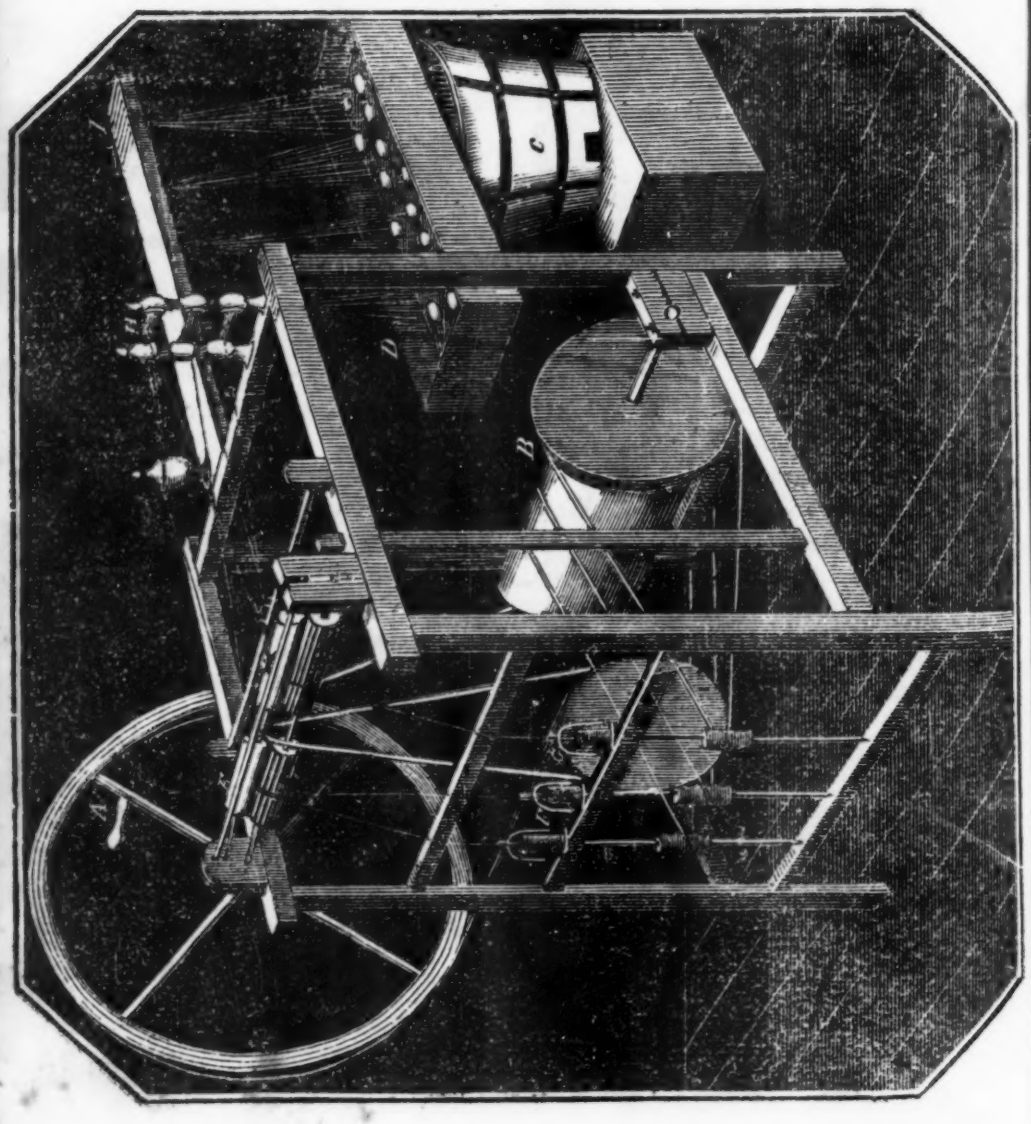
* I concur with Sprengel and Beck in uniting Ipomaea with Convolvulus, the simple stigma is a character too unimportant for generic distinction.

† Note in our next number.

Liatris scariosa	*W.*	Lilium carolinianum	*Mich.*
" spicata	*W.*	" catesbaei	*Walt.*
" squarrosa	*W.*	Lindernia dilatata	*Muhl.*
" tenuifolia	*Nutt.*	Linum virginianum	L
" walteri	*Ell.*	Liquidambar styraciflua	L

(To be continued in our next.)

BROOKS' PATENT
SILK SPINNING MACHINE.



This machine, invented by the patentee, Mr. Brooks, (a native of Massachusetts) has been found so very simple and easy in its operations, and yet so perfect, that it is highly recommended as unsurpassed in performing the purpose for which it was invented, *i. e. reeling* and *twisting silk* from the cocoons, and manufacturing it into *sewing silk*. By the different arrangements of the machine, it will operate upon a single or double thread, as may be required, and prepare it for *twisting* or *weaving*. Experience has already proved, that by uniting the filaments as they are drawn from the cocoons, wet in their natural glutinous substance, the thread is made more perfect.

Description.—A, the handle of the crank, giving motion to the machine. There is a band around the large wheel, passing around a small wheel attached to the axis of the cylinder or drum.

B, the drum or cylinder, around which the bands giving motion to the spindles pass.

C, the furnace for heating to blood heat the water in the pan D, containing the cocoons.

E, the collars regulating the supply of thread given to the spindles.

F, the two spindles for twisting the single threads.

G, the spindle for the double twisting or sewing silk.

H, the two upright pillars supporting the bobbins containing the single thread to be double twisted.

J, a projecting slat, containing the leading wires to receive the threads from the cocoons in the pan D.

Our present object is to present the particulars of an experiment, made by the editor of the *New-York Farmer*, with this machine, and a description of it, referring to the plate annexed, as set forth in this paper—with a view of introducing the subject to our Southern friends for their consideration.

"All the practical information we had had, was from seeing Mr. Brooks exhibit his machine in operation a few times. In connexion with another person, whose opportunities of practical knowledge were no greater than our own, we took a peck of the cocoons, 485 in number, and weighing ten ounces. Without assorting them, as we should have done, we put a handful of some 20 or 40 into water about boiling hot—took a small broom and pressed them into the water—found the floss silk adhering to the broom—gathered the silk from the broom, and kept draw-

ing the silk until a fibre ran off singly and evenly from each cocoon—lifted these running cocoons from the water with an instrument not half so convenient as a skimmer, and placed them in a winding basin partly filled with heated water—served other cocoons in the same manner until we acquireds two thread of about 100 fibres or cocoons, and carried the threads through the guide wires, between the rollers to the bobbins. Thus prepared, we began to wind by turning the wheel, keeping up the thickness of the thread by supplying additional cocoons, and collecting and attaching the ends of those that had broken. After sufficient quantity was on the bobbins, took them and placed them in the upright posts, and carried the ends through the guides and rollers to the bobbin, for the purpose of doubling and twisting. Replacing the bobbins with two more, we then, by turning the wheel, wound, doubled, and twisted the silk at one operation. Thus continuing, we obtained from the peck one and a quarter ounces of fine sewing silk, which, when deprived of the gum, by being several times boiled in soap suds, weighed one ounce. Besides this, there were four and a quarter ounces of floss silk obtained from the gathering of the silk from the broom, from cocoons that would not wind, and from those that had been injured by insects, or imperfectly formed. These four and a quarter ounces after having been cleansed in soap suds, weighed three ounces. This floss silk is to be carded and spun for stockings and other purposes.

"The sewing silk being very fine, did not, owing to improper adjustment of the machine, give a sufficient twist; in other respects it was pronounced a fair, saleable article. When it is considered that we were entirely *green* at the business, were several times obliged, as soon as we got into operation, to omit our labours for another day, and were not in possession of the conveniences for producing a good article, our readers will perceive that the manufacture of silk for common domestic purposes is not more difficult than to spin flax or wool, which was formerly done by the females of almost every farmer's family in the country.

"Our lowest estimate of the value of the bushel when made into sewing and floss silk, is $4.50. Our information, however, relative to its price, is derived from books and personal inquiries, and is extremely varied, and often

contradictory. One thing is very certain, that $2.50 to $3.50 per bushel for the cocoons are a remunerating price to the farmer, the manufacture of them into silk in his own family must be very profitable.

"We used a beautiful machine, made of mahogany, in a substantial and workmanlike manner. It cost $28. Those of hard but less costly wood, and thoroughly made, are $25. With an additional bobbin, $30 and $26." They are for sale by H. Huxley & Co. 81 Barkley-street, New-York. *Editor So. Agr.*

On Saw Dust, as a nutriment.

[The following article has been some time in our possession, and often postponed, but on reading a similar article on this subject in a late Northern paper, it was thought worthy of a place, from the singularity of the facts it contains.—*Ed. So. Agr.*]

In page 355 of the London Philosophical Transactions of the year 1827, there is a paper by Dr. W. Prout, a very accurate chemist, on the analysis of vegetable substances; particularly, of fine white sugar, pure starch of wheat, and the woody fibre of the saw dust of box wood, and the willow. All these vegetables are chemically composed of hydrogen, oxygen, and carbon. In all the woods (except the resinous woods of pine, fir, &c.) the hydrogen and oxygen exist in the proportions necessary to form water; and they are found thus combined as water. So they are in sugar and starch.

Sugar, therefore, when analyzed, may be considered in 100 parts by weight as composed of 42,5 carbon 57,5 water. *Starch*, of carbon 44 water 56. Arrow-root about the same. *Lignin*, or the woody fibre of box tree and willow tree reduced to saw dust, repeatedly boiled in distilled water till the water came pure, gave, carbon 50 water 50. All these substances were carefully and perfectly dried in a temperature of from 200 to 212 Fah.

Saw Dust Bread.—The chemical component parts of these substances being alike, why should they not be equally nutritious as aliment? Dr. Prout, p. 381, proceeds to relate an experiment of Dr. Autenrieth of Tubingin, on the conversion of woody fibre into aliment. It may be stated thus. Take the saw dust of any common wood not resinous; the pine and fir, and cedar tribe to be

excluded. Boil it in repeated waters, till water will dissolve nothing more. Press it; dry it in an oven, but not so as to char or discolour it; the object being dryness and nothing more. When dry, tirturate it so as to reduce it into fine meal; make it into a dough with water, adding to it as a ferment some leaven of common flour. It will ferment, and rise like dough; let it be baked in the common way, the loaf having a good proportion of crust.

This bread is yellowish, not palatable, but more so than the bread used on the continent of Europe in times of scarcity, which is made of bran and the husks of wheat. It is digestible and nutritious. Flour thus made of woody fibre (Lignin) may be boiled into a tough, tremulous, nutritious jelly. Some intimations of the Indians using woody fibre for a like purpose, I think is contained in Bartram's Travels, but I have not the book at hand.

It it manifest, that the usual times of plenty, this process is not likely to be put in practice. But it is equally manifest, that occasions may occur, when knowledge of this fact may prevent starvation.

I believe coarse paper has been made of woody fibre, treating it by boiling with about 15 per cent of its weight of carbonate of soda. C.

PART II.

SELECTIONS.

On Chemistry, as connected with the developement and growth of Plants.

By the Author of the Domestic Gardeners' Manual; in a series of numbers, published in the London Horticultural Register.

ARTICLE FOUR.

I CONCLUDED my last paper of the present volume, with a reference to the *phænomena of atmospheric pressure;* and I now resume the subject.

The air or atmosphere of our globe is an elastic fluid. That it *is a fluid*, no one can well doubt who considers its power of motion: it flows and moves in all directions. The *elasticity*, or property of expansion possessed by the air, is almost as apparent as its power of motion, and that this elastic force is greatly influenced by alterations in temperature, may be rendered manifest by the simple experiment of presenting a common bladder, which contains a small portion of air, to the action of fire in a grate. The air within will gradually expand; that is, its particles will occupy more space, press against each other, and bear upon the loose and flaccid membrane of the bladder, in every direction, till they completely distend it. When it is in this state, if it be pressed by the hand, it will yield to the pressure, but will instantly recover its form on that being removed, with a spring, or elastic action; the touch, or propulsion exerted by the finger proving the fact, and determining at the same time, the nature of the elasticity of the confined air, by the *sensation* excited on the finger. It will be thereby evident, that, were it not for the resistance of the membrane, the air within it, would extend outwards, and occupy more space; and in fact, an increase of heat will, sometimes cause the expansive force to burst the bladder with a considerable explosion. By removing the bladder to a distance from the fire, the air will contract, the membrane will no longer be pressed outwards, and therefore, will soon resume its loose and flaccid appearance.

Persons who possess an air-pump, and the apparatus which instrument-makers term—"a *bladder and weights*"—can easily satisfy themselves that, a very minute portion of air in a sheep's bladder, (perhaps not so much as might be contained in the egg of a pullet,) is capable of not only distending the bladder to its utmost dimensions, but of raising a set of leads, weighing from twelve to fifteen pounds. The apparatus must be placed under the receiver of the pump, from which the air is to be withdrawn. The external *pressure* being thus removed, an effect equivalent to the action of *heat* is produced, and the air within the bladder expands, forcing up the mass of incumbent

weights. This is a beautiful, convincing, and most important experiment; but like all the others, leaves the mind involved in wonder at the mysterious operation of the exciting *cause*.

Philosophers then, are correct, when they assert "the atmosphere is an *elastic fluid* which invests the earth;—that it moves and presses equally *in all directions*, and therefore, rushes in, and fills every place not previously occupied by a more solid substance."

Air possesses *weight* as well as elasticity; and this can be proved by means of an accurate and delicate balance. It has been ascertained that, when the Barometer stands at 30 inches, and the thermometer at 60 degrees, 100 cubical inches weigh about 31 grains. At this calculation, 1000 cubical inches will weigh 310 grains, and a cubic foot (or 1728 square inches) will, in round numbers, be estimated at 535 grains: these weights refer solely to air at the surface of the earth.

But as its particles press upon one another, so, as the distance above the surface increases, this pressure diminishes, and the density of the air becomes less. Hence, as we ascend in the aërial region, the bulk of air cannot be of the same weight, or exert the same elastic force. It becomes more attenuated,—that is,—the same quantity occupies an enlarged space; and in very elevated situations, retains scarcely enough of elastic power to expand the lungs; and respiration therefore, becomes laborious. We have no means to determine with precision, to what altitude the atmosphere extends; but admitting that its limits may be forty-five or fifty miles above the surface-level of the sea, the pressure at that height, must be reduced below the power of common estimation: this may be somewhat elucidated by the following facts. At the surface of the ground,—water (as seen in the action of the common pump) may be raised by the pressure of the whole atmospheric column, nearly 34 feet. Mercury—a dense fluid metal,—may be made to ascend above 30 inches; but at the height of a few thousands of yards, a balloon of varnished, thin silk, filled with hydrogen gas (which is the lightest of all known fluids,—100 cubical inches weighing little more than two grains and a half,)—can no longer be supported. It cannot therefore be unphilosophical to conjecture that, the bounds of the atmosphere are limited,—that they extend not many miles above the surface of the globe.

I do not attempt to write a treatise on pneumatics; I merely wish to adduce a few plain facts, to prove, *first*, that pressure and elasticity exist; and *second*, to introduce the reader to an inquiry into the cause or source of the several phænomena which they exhibit.

The Barometer, or weather-glass is an instrument by which the weight or pressure of the incumbent atmosphere is ascertained: its name is derived from two Greek words pronounced *baros* and *metron*; the former implies *weight*, the latter *measure*: the instrument *measures* the *weight* of air, in *inches* and $\frac{1}{100\text{th}}$ parts of inches. The general average height of the quicksilver in the weather-glass throughout Britain, may be somewhat under 30 inches; or in other words, the atmosphere,—which at a medium pressure at the earth's surface, exerts a force equal to the weight of *fifteen pounds upon every square inch* of surface,—is under ordinary circumstances, able to sustain a column of mercury at the height of nearly 30 inches in the tube of the instrument. But variations in atmospheric pressure are continually taking place, and the rise or fall of the Barometer indicates these changes; it does not however point to their *causes*; these remain involved in mystery. It has

been supposed that, "the increase of weight proceeds from the quantity of *water* dissolved in the air; this notion is however, refuted by the simple fact that, *when the barometer stands highest*, the air *is most dry*" and vice versa. Again—"the order of the phænomena corresponds with the facts, that the barometer *is most steady* when the *weather is clear*, and fluctuates most with *clouds and rain*."

These phænomena *have* occurred, and been noticed, and will be so again and again; but the very converse of them all have occurred: rain and clouds have frequently been concomitants of a very high state of the glass; and during easterly winds, a total state of suffusion, without a gleam of sunshine, has been maintained for days—nay, weeks—with great elevation of the mercury. Fine, clear, hot weather, with vast evaporation, has not uncommonly been witnessed at periods when the glass has been low, and the wind at south-west.

I cannot pretend to elucidate causes so deeply involved in obscurity, and governed by inscrutable laws: but I may conjecture that all the phænomena, however opposed they may appear one to the other—tend to demonstrate that, vapours taken up from the land and waters into the atmosphere are, by the *electrising principle of light, converted into atmospheric air*. A vast atmosphere of steam, or watery vapour is, as we have seen, carried up into the atmosphere: millions of tons of water are daily, hourly, evaporated from the surfaces of the sea and land! How are these employed—to *what* are they resolved? Let us take a case in point, and by bringing the inquiry before us in a tangiable form, endeavour to arrive at an idea, at least, of the fact, and its consequence.

The present dry season cannot prove a delusion. At the moment I write, the Barometer stands at the medium of the altitude which it has this year attained. Subsequently to the abatement of the vast continuous wind and rains of December and January, it gradually rose to 30 inches, thence to 30 $\frac{46}{100ths.}$ (the greatest elevation which I have observed in Berkshire,) and *that* on March 16th. From that period, it fell to 29 $\frac{80}{100ths,}$ but recovered its altitude in a great degree. During the present month it has fluctuated between 30. 16 and 30 $\frac{30}{100ths.}$—its medium being rather above 30. 20. This atmospheric weight,—almost unexampled in steadiness and duration—has been attended with brilliant sunshine and perfect drought. The wind has varied a few points from the east, has been piercing at times, but generally unattended with that usual unpleasant concomitants of spring, east winds.

The volume of water carried up into the aërial ocean must have been enormous, and yet the aridity, the perfect dryness of the air has been almost undeviating. What has become of the watery vapour, where it is accumulated, or to what region has it departed? Drought prevails here and elsewhere, barometer elevation is maintained, no rain of moment has fallen since the last week of January, the precipitation even of the *dew* has been extremely minute! Occasional hoar-frosts have occurred; but the only marked feature of the last six or seven weeks has been premature, confirmed aridity. Now, as steam and vapour are lighter than air, as clouds formed in the atmosphere *float* in that medium, what can have prevented the air from becoming *lighter* by its admixture with the never ceasing accumulation of watery vapour, during a period of six weeks? We see by facts of frequent occurrence that, drought, or evaporation do not depend altogether upon

heat. A parching east wind will at times dry the ground much more effectually than the rays of a hot sun: hay will "make" much quicker on some occasions under a cloudy sky, than in bright sunshine. In showery weather the evaporation (with a temperature of perhaps 50 to 60) will be vastly more rapid than during a clear sun and great thermometric heat. In October, I have seen the instrument at 70—73 degs.—the Barometer at 30 inches, the heavens cloudless; and with all these requisites of perfectly fine weather, the evaporation has been trifling, the dews have been intense and durable, and every stone of a pavement has been covered with water! I shall not now insist upon other facts; sufficient have been alluded to—I trust—to induce thought and reflection. Without asserting any thing, I venture again, and urgently, to suggest that, the watery vapours *must* either render the atmosphere specifically *lighter*, in proportion to the quantity in which they are present; or that they enter into *union, and become one with it*, by a peculiar electric action. If my view be correct, then, in proportion as vapour is converted into air, the weight of that air must be increased, because its bulk is enlarged. I believe that this bulk is perpetually subject to changes; and that these alterations are at all times produced by the decomposition and reformation of the vapours of the atmosphere. The agency, its mode of operation, and the proximate cause, are hidden secrets: we see not the machinery, and can only draw inferences from the observation of effects.

Upon Heat, and its connection with the Phænomena of the Dew.—Of Heat, its nature, substantially, or immateriality, it must be acknowledged that, we really *know* little or nothing. We may define terms, and conjecture with Lavoisier (as he stated in his Memoir in 1777,) that it is a *material substance*—for after attentively considering the phænomena of attraction and repulsion, he conceived it "difficult to comprehend these phænomena without admitting them as the effects of a real material substance. or very *subtile fluid*, which, insinuating itself between the particles of bodies, separates them from each other." To this substance, the renowned father of modern chemistry applied the name of *igneous fluid*, (from *ignis*—latin for *fire*;) and the *matter* of heat. Subsequently, in conjunction with other chemists, his great coadjutors, with a view of rejecting "all periphrastic expressions," he distinguished "the *cause* of heat, or that exquisitely elastic fluid which produces it, by the term *Caloric*."—(*Calor*—Latin—HEAT.)

We may admit these conjectures—or with Dr. Young, the philosopher, we may doubt the theory of the modern school. He believed that the production of heat by friction, appeared to afford an unanswerable confutation of the whole doctrine. "If the heat is neither received from the surrounding bodies, which it cannot be without *a depression of their temperature*, nor derived from the quantity already accumulated in the bodies themselves, which it could not be, even if their capacities were diminished in any imaginable degree, there is no alternative but to allow that heat *must be generated* by friction: and if it is *generated out of nothing*, it cannot *be matter*, nor even an immaterial, or semi-material substance."

Difficulties surround the subject on every hand; and to remove them, I conceive we can only apply—philosophically—to the *source of heat*; for source it has but *one*, The *sun* is the object to which we must turn our minds; and therein we shall, at least, obtain some solid cause for satisfaction. We may not be able to conjecture what this glorious luminary really is,—and we may find ourselves at a loss to

conceive the nature of his substance, or what is the agency by which he radiates light and heat to the planetary system: but still, we feel assured that we have *reality* before us—that we see an effulgent orb, which our senses assure us is ever pouring forth streams of light and life. Now, from the beginning of time, the sun has sent his beams, to the earth, and though, we have fair reason to conclude that they produce no *positive heat* till they strike upon a decomposable reflecting substance, yet the beams are the operative, efficient. cause of heat. From the period of the first ray to the passing moment of time present, not a particle of light has been wasted, or extinguished: the traceable analogy of all nature confirms, I think, this assertion. The light not reflected, is absorbed by all substances upon which it impinges, and effects electro-chemical decompositions, becoming itself perhaps decomposed. The *heat* which is manifested by fermenting substances, by chemical mixtures, by acts of friction, and which is *felt*, but *not seen*, is an effect produced by the play of affinities operated by the agency of absorbed solar light: the whole theory of *latent heat* is based upon this fact.

That which at any time, or by *any means*, *becomes revealed*, must have *existed*, must have had *an origin*. I ask the candid reader then, whether the emanations from the sun, the effulgence which has beamed upon the earth for thousands of years, do not offer a more rational solution of all the phænomena of heat, than that which is attempted to be given by the theory that, "the earth and each planet belonging to this system, is furnished with the necessary portion of *caloric*, and the rays of the sun elicit the native caloric which is inherent in them, and occasion what is called heat." (See Parke's Rudiment, No. 50—60, &c.) I shall not enlarge in an inquiry which must be referred to the action of *Light*—and will be pursued in a future paper. I do not deny that heat may lie hidden and masked throughout nature; but I conceive that in whatever state it exists, whether latent or revealed, *it is an effect* produced by the agency of the sun-beams, that have been, and continue to be, absorbed; and not a material essence, *Sui-generis*, which is integral with the substance of matter and independent of solar agency.

Heat is said to *radiate* from the surface of the earth, and this radiation connected with the aqueous vapour which exists in the air, is the direct cause of the deposition of the *dew*.

Upon this subject, in order to present some clear idea of the received theory, I must quote a few lines from the work of the late Dr. Wells.

"Heat—it is observed—is *radiated by the sun* to the earth, and if suffered to accumulate would quickly destroy the present constitution of the globe. This evil is prevented by the radiation of heat from the earth to the heavens, during the night, when it receives from them little or no heat in return. The surface of the earth having thus become colder than the neighbouring air condenses a part of the watery vapour of the atmosphere *into dew*. This fluid appears chiefly where it is most wanted, on herbage and low plants, avoiding in a great measure, rocks, bare earth, and considerable masses of earth."

I must stop here to make a remark or two; for the foregoing observations contain much of truth, and *more* that has merely a plausible appearance of truth. The surface of the earth *does* become, at times colder than the air above it—this is a fact; but herein there is an evident departure from the ordinary law that governs the distribution of heat; for bodies of different degrees of temperature when brought into

contact, tend mutually to *equalize* the temperature of each: heat will be attracted from the one, and then it may be said to radiate heat to the other; but the heated body will not thereby be so deprived of its heat as to become *colder* than the one which acted upon it: the attraction and radiation will proceed, till both bodies become of *equal temperature*. If then, the air become cooled by the absence of solar light, and the surface of the ground be thereby excited to radiate the heat it had received, it ought to do so, till it be cooled down to the temperature of the air, and no lower: But if, as indeed is the fact—the surface, especially that covered by herbage, become *cooler* than the air, then there must be some agency in operation which is not manifested by the received theory: in other words, the reasoning made use of will not fully explain or elucidate the phænomena to which it is applied. The act of radiation implies a power that is concealed, and therefore very difficult to be appreciated: still however, it is known that, living vegetable bodies rank among the best conductors of *electricity:* they become sooner dewed; but they do not, by any means, appear to be active *radiators* of *heat* naturally. This conduction therefore, of heat, seems to depend upon *that* agency which stimulated the flow of the vegetable currents,—the electric vital fluid which induces the ascent of the sap;—and if so, then, *that radiation* which brings down the temperature of the vegetable body below that of the surrounding air, is an *electrical phænomenon.*

A covering of clouds is inimical to the deposition of dew. Dr. Wells argues that dews appear only on calm, clear, nights, and that very little is ever deposited in opposite circumstances, and *that little*, only when clouds are very high. Dew is never seen in nights both cloudy and windy; and if, in the course of the night, the weather from being serene, should become dark and stormy, *dew which had been deposited, will disappear.* When *warmth* of atmosphere is compatable with clearness, as is the case in southern latitudes, though seldom in our country, the dew becomes much more copious, because the air then contains much more moisture.

The first part of this paragraph contains much truth, because it simply describes *an effect;* as to the cause, we must look for it in *that* which *induces* radiation. In a clear state of the atmosphere, cold generally increases, and dew is deposited. By some secret agency, the electical surfaces are, I think, changed. The ground is in one case the *attractor*, and as the source of heat is etherial fire, *that fire* is first attracted by the points of the vegetable bodies—those prime and most active conductors; and in this act, the particles of vapour are deprived of that fluid which had kept them in a state of repulsion—they coalesce by the abstraction of their electricity, and are deposited upon the conducting herbage, particularly, and most copiously, upon its pointed terminations. This conducting power, possessed in so intense a degree by grass, and living vegetables, will explain *why* the *surface* of the ground becomes *coldest* in their immediate vicinity—for they abstract all the etherial fire from the air immediately in contact with them. But as they are only the instruments, and not the *causes* of the phænomena, some mighty agent induces, as before stated, a change in the aërial region, and renders that region the *attracting surface by producing a stratum or body of clouds:* the vapours then, are drawn upwards: the etherial matter in the opposite surface of the ground, under the clouds, is poured forth—*still through* the herbage as its conducting medium,—renders that surface warmer, attenuates the watery

deposit upon the points of plants, and bears it upwards in the form of vapours, which join, and congregate with the attacting stratum of clouds.

The second part of the paragraph asserts that when *warmth* is compatible with *clearness*, the dew becomes very copious. This seems to be an assumption of a fact that occasionally may be, and is, in conformity with the order of nature, but which is by no means generally so. In very dry summers, the dew rapidly diminished: in 1818, when the temperature at night ranged between 60 and 70 degs. for weeks together, scarcely any dew was deposited. Confirmed drought, perfect clearness, and *high temperature*, by *day and night*, were unproductive of dews, though the evaporation must have been at its maximum. In fact, *air*, heavy air, was the concomitant; the barometer was almost constantly above 30 inches, and *proved* the weight of the atmospheric column. Even in the present arid spring, the dews amount (where my means of observation extend, at least,) to little or nothing; not to one-fourth of that quantity in which they are deposited in ordinary, showery springs, during the fine intervals.

Dr. Wells observed that a very thin, and slight covering, even a muslin handkerchief, stretched at a few inches above the surface of the ground, retained much warmth;—thus, 'one night when the fully exposed grass was 11 degs. colder than the air,' the sheltered grass was 3 degs. warmer:—from these, and other facts, some philosophers —Dr. Wells particularly—have inferred that—the formation of dew *is the consequence of radiation*,—that cold is the cause of dew, and not dew of *cold*; and it is always found, during the formation of dew, that the surface of the ground is colder than the circumjacent air, owing to its radiation of heat into the atmosphere. The best radiators are soonest dewed; hence, grass and vegetables are more quickly covered with dew than gravel stones or metal; and as the earth dissipates its heat by *radiation*, it will be seen that any *slight awning* spread over the ground will prevent radiation, and keep the earth warm." "Bodies *become colder* than the neighbouring air before they are dewed; and as different bodies project heat with different degrees of force—" in the operation of this principle, conjoined with the power of a *concave mirror of clouds* or any other awning, to reflect, or throw down again those calorific emanations which would be dissipated in a clear sky, *we shall find a solution of the most mysterious phænomena of dew*."

In the last few lines with inverted commas the reader will find a condense of Dr. Wells' theory, and in the preceding part of the paragraph, that of other reasoners.

It may be proper to remark that, in the same principle of radiation is to be traced the protecting power of a covering over fruit trees in early spring.

I agree with these authorities in as far as *effects* are discernable; but I seek *a cause*,—an active agent—which cannot be discovered in their theories. I therefore retain the same opinion which I expressed some years ago, and must now shortly recur to it; and thus, bring the long paper to a close.

I do not question, or doubt, that radiation takes place from heated surfaces, whenever a cooler medium acts upon those surfaces; the ground, whether it be a sandy desert, or a meadow richly clad with verdure, will radiate heat; but how comes it to pass that the latter will become *colder* than the atmosphere which surrounds it?

The radiation alluded to in the theory is supposed to be produced by vegetable organized bodies, and to result from a faculty which they possess of carrying off heat from the earth. But before the reader yields his unqualified assent to this begging of a question, he should reflect upon the peculiar structure of the radiators, and the wonderful electric agencies which are ever in active operation. Vegetables, including herbage, shrubs, and trees,—every pointed termination of their leaves, and their terratures, every leaflet, every prickle and bristle,—all these perform some important offices in the economy of nature: they are "the best of radiators, and become soonest dewed"—but at the same time—be it remembered—they constitute an assemblage of so many points, which are the *very best* of *electrical conductors*; and, probably depend upon the agency of electricity for the propulsion, laboration and distribution of their own vital and secreted fluids.

Why should trees and herbage condense such a vast volume of water? Why should a spot of freshly digged ground be *covered with hoar-frost*, when hard, unwrought ground discovers not one particle of frosty rime, unless it be on spots where some weeds or projecting point be standing above the surface? Let those answer these questions with calmness, and by philosophical reasoning, who persist in believing that radiation, without any other exciting cause, effects these miracles! I hesitate not to suggest that the proximate cause of the precipitation of the dew must be referred to the peculiar structure of vegetable bodies,—a structure which constitutes them, individually and collectively, not only perfect instruments of electric conduction, but also an assemblage of myriads of points at which the ascending and descending electrical currents meet and neutralize each other, in exact conformity with the laws of electric induction,—depositing the aqueous particles which, till then, they had held in a state of repulsion, or of infinitely minute division. It does not appear that grass and herbage are endued with the power of radiating or conducting *heat* in a degree by any means equal to that of *metals*—substances which, it is satd, *do not become dewed*, at a time, and under circumstances wherein the circumjacent berbage is covered with minute drops of water,—a fact which is not only very remarkable in itself, but one which affords convincing proof that plants *do not become dewed* solely, *by their power or radiating heat.*

The mysterious phænomena of the dew and its disappearance, can therefore be solved, by referring them to the conjoint attraction of the etherial electric essence of light, in the earth and atmosphere. *How* this acts, our limited powers of perception may never be able to detect; but in its operation we find a beautiful, and never-failing instrument of attraction, repulsion, condension and attenuation. We view thereby, *heat* as an effect, produced by the chemical energy of this all pervading etherial fluid: all is harmonious—all is in conformity with fact and experience, and all is magnificent. We therein see how important is the agency of the atmosphere, not only as a vehicle of respiration, but as the solvent of watery vapours, as part of which it simply holds in solution, while that which would be redundant, it assimulates with itself. We see also the beauty and exquisite adaptation of the vegetable organization, which fits it to the medium of conduction between the earth and air; in the performance of which, the structure itself is enlarged and its parts developed by growth. I shall not amplify now, for as all must, I conceive, be referred to the agency of light, I shall reserve what remains to be said, to the article which I shall devote to the consideration of that primary and most mighty agent.

April, 1834.

On Making Wine.

[FROM THE SOUTHERN PLANTER.]

Retreat, January, 1835.

Dear Sir,—Yours of the 21st of June last year, came to hand in due time, and has remained unanswered, because I expected from month to month, to be able to answer it with a compliance with the request contained therein, which health, or the want of it, caused the procrastination.

I have made three or four attempts to write out my experiments on cultivating vines, and making wine, but always made too much of it; and it is difficult to condense it within bounds particularly the cultivation. It is now in rough, and I am in progress with the last paring down, and hope it may not be long before I may be able to forward the transcript.

As my servant is going to Muscogee in a Jersey, I send a box of specimens of wine, according to their labels, viz.

1	bottle of	Bland grape, vintage	1829.
1	do.	Schuylkill grape "	1829.
1	do.	Warrenton "	1827 or 8.
1	do.	Catawba "	1826.
1	do.	mixed white grape "	1831.
1	do.	oval clear or light red	1833.
1	do.	Tinta (Madeira grape)	1829 or 30
1	do.	Miller's Burgundy	1828.
1	do.	Scuppernong	1834.

which will sparkle, if kept on the side till May or June, as I think, for I could not decant it without a syphon, because of its inclination to bubble. I hope it may not fly by the way and break some of the other bottles. And, in order to fill the box, I send three bottles —one marked W for Warrenton, on the cork, 1832; one T for Tinta of '29 or '30; and one Schl for Schuylkill, of '30 or '31; which I request you will receive in lieu of a year's subscription for the Southern Planter, and may be you will like them; and if you do not, "let it go."

I could say which was the best of the wines in my opinion; but do not desire to forestall opinion.

I much respect, dear Sir, your obedient servant.

THOMAS M'CALL.

P. S. In my Wine Essay, I shall state how the above Wines were made.

Remarks.—With the above letter from our esteemed correspondent, we acknowledge the receipt of the box of specimens alluded to. Mr. M'Call will please to receive our thanks for the handsome manner in which he has shown his approbation for our labors, and the very liberal manner he has rewarded them. The specimens were all received in order, and were excellent, each in its kind. Mr. M'Call has arrived at great perfection in the art of wine making; and the inspection of his samples must satisfy any one, that if the general character of our domestic wines is at a low estimate, it is not the fault of our grapes, our climate, or our soil; but may be attributed solely to the want of skill in those who undertake the business. These specimens would not lose

on a comparison, we think, with any of the foreign wines we are acquainted with. If they have not the strength and body of the spurious decoctions usually sold as Madeira, they have a richness of flavor, which to the pure wine drinker is far preferable. We forbear particularizing the specimen most esteemed. Where all are good, it is hard to say which is the best. On this point too, amateurs differ; some prefer the flavor of one, and some that of another. One would select this as having more body; another, that, as having most spirit. For our own part we liked them all very well, and have hardly yet made up our minds to which we shall finally yield the palm.

Mr. M'Call's essay on the cultivation of the vine and the manufacture of wine, is exactly the thing which is wanting to give the business an impulse in the Southern States. We look for it with much interest.

Grape Vines—Scuppernong and others.

[FROM THE AMERICAN FARMER]

From several letters sent us by a much esteemed friend in North-Carolina, we have extracted the following observations relating to grape vines, he being a practical farmer, who gives great attention to the cultivation of the vine, with a view to the making of wine.

"The Scuppernong vine will not commonly grow from cuttings, a better, nay the best method of propagating it, is by burying the branches, leaving one bud or more above ground in wet weather during the spring and summer, they are then well rooted by the following fall. Those who have not witnessed this method would be surprised on seeing to what size the roots will grow in one season, frequently from two to four feet long, appearing as if at least two years old. Some which were thus planted in the spring leaving one bud above ground grew by fall to 8, 10 and more feet in length, and the following season produced some fruit. Scuppernong vines having even the smallest root will always grow on being transplanted, indeed it seems nearly immaterial whether they have one or many, large or small roots."

"I have two varieties of the Scuppernong, the white and the black, mostly the former which is the genuine variety, or that principally cultivated in the native place of the Scuppernong, the lower part of this State. In propagating from the seed the black variety is generally produced. I have, however, now in bearing, a white variety, which I call the Muscadine. The fruit resembles in taste the common Muscadine. It is a good grape but I think inferior to the genuine."

"The Scuppernong, I believe, does better without any trimming, except that at first growth, necessary to prevent its becoming bushy. It seems to delight *unchecked*, to spread *high* and *far* over scaffolding, the hardest freezing I believe never injures it But there is no such difficulty in regard to the Halifax grape. It ripens early. This grape is also a great bearer, very hardy, and very rapid and luxuriant in its growth, of which you may judge when I assure you that one which I grafted into a native stock in my vineyard in the spring of 1832, grew that season near thirty feet, and the past summer has produced more than half a bushel of grapes. The fruit is a round purple grape not quite as large as the Catawba, but it grows in larger clusters; indeed these are uncommonly large and similar in shape to what is called here the common bunch grape, or the frost grape of the North, The

fruit is finely flavored and I have reason to believe excellent for wine, as well as for table use.

"The Cob's-wine from the banks of the Ohio, so famous for producing fine kinds of native grapes, is similar to the Halifax in growth, bearing properties and clusters, but is a larger grape than the Catawba. Its flavor is peculiar and much admired.

"The Schuylkill Muscadel or Pennsylvania Madeira, is one of the tried kinds that best endure the hard winters in that State.

Gama Grass.

[FROM THE SOUTHERN PLANTER.]

Mr. Bartlett,—I beg you to receive my thanks for your kind attention in forwarding the back numbers of your valuable periodical. Since I have had the perusal of them, I am perfectly informed of what my *loss* would have been had I not received them. On looking over those numbers I discover in one of them, some remarks on, and inquiries respecting the *Gama Grass.* Having been the first individual who was so fortunate as to get the public attention directed to this plant; which I am compelled to view, after an assiduous cultivation of *ten years*, as of extraordinary value to the agriculturists of the South. I feel myself competent to answer those inquiries satisfactorily, and I think, to do away the imaginary objections suggested.

With me this plant is found to grow *in every kind of soil:* but certainly to exhibit its extraordinary productiveness, the soil must be good, naturally, or made so by art. And in addition, the presence of calcareous matter is essential. As regards its *growth*, after being cut *monthly*, I am yet to learn the name of a plant that equals it, if the soil is properly prepared. I know that they are *twenty-three inches after fifteen days* growth. At this stage I am (after years of experiments made to determine this point,) fully convinced that in the production of milk, and butter, two of the most agreeable *et ceteras* of a comfortable table, it is not excelled even by the wild pea vine, so long celebrated for the production of those two articles, in their richest and most delicate state.

For the purpose of making *hay* or dry forage for the winter support of animals, this grass has been well tested. In curing this grass for *hay*, it ought to be cut at *thirty days* growth, when it may be taken from the scythe and stacked, if mixed with equal quantities of good oats, rye, or rice straw, each layer of grass as laid on, (or what is better, mixed as stacked) sprinkled with salt, when it will be found to cure admirably, and impart a great portion of its highly aromatic flavor to the straw, increasing the mass of excellent forage.

In cutting this grass at thirty days growth, the sickle is certainly the most economical plan, and sufficiently expeditious for soiling; but I can assure your readers that but little practice is requisite to learn an individual to cut with the scythe. I have had it cut both ways without any difficulty.

I notice the remark, that as the roots progress in age, the blades come out from around the edges, and leave the centre of the root bare. To this objection I will candidly communicate a piece of information I lately received, and which obliges me to believe it is entirely owing to our mode of cultivation that this takes place. About two months ago, a most observing planter called on me for the purpose of having

some conversation on the subject of this grass. This peculiarity was noticed; he immediately remarked, that in a patch of the Gama found in the field, in its native state, about one acre, there was not one root to be found in the abovementioned situation; that a remark of mine had induced a close examination; and added that it was entirely owing to my mode of cultivation that the roots exhibited this appearance. That I cultivated to produce root, by giving a distance that caused the roots to spread to an unnatural breadth, and which prevented that thick coat of foliage found attached to the plant in its natural state; that none of the roots found in this patch, which to his knowledge is fifteen years old, and appeared as old and luxuriant when he settled on the land (black limestone land) could have been originally more than twelve inches apart; that when he first noticed this plat of grass and attempted to break it up, with the plough, the ground was totally occupied with the roots, and which prevented his effecting the destruction of the plant; that finding his horses, mules and oxen preferred it to all other grasses, he let it stand for hay, and from it made annually several stacks. The statement appearing to carry weight with it, I went the next dav and examined for myself, and found the whole entirely correct; and am now induced to believe his observation judicious. In consequence of this circumstance, I shall plant a lot of Gama at twelve inches from plant to plant, and let trial determine the correctness of theory. During a ride last month through a part of the Choctaw country, I found this grass in greater luxuriance than I have ever been able to produce it, and uniformly I fonnd the roots close together, and blade not more than half the width of that cultivated as I have done. Giving the roots so much distance, I am now assured, produces a worse growth of blade.

As regards the important point, viz. the nutritive quality of this grass, in addition to my own experience, which has established its highly nutritive character, I beg leave again to refer to the communication before mentioned. I have frequently stated my own opinion on this subject. I am happy to find it completely corroborated by others. Your agricultural friends have nothing to fear in the cultivation of this grass, but the difficulty of getting seed to plant. I shall give the result shortly, of a trial to produce this grass in the highest perfection, made this year. To the mode of planting and preparing the soil the singular production of vegetable matter must be attributed; the season has, however, been remarkably fine with us for grass and weeds.

PLANTER.

January 24th, 1835.

Ploughing in Cornstalks, the cheapest mode of using them for manure.

[FROM THE FARMER'S REGISTER.]

The several operations of carting our cornstalks to the barn-yards, converting them to manure, and then carrying them to be restored to the soil, requires so large a portion of the labor of good farmers, and are so generally neglected by others, that it would be a most desirable result to obtain the same benefit for the soil by much less labor. There can be no doubt of the great diminution of labor by the practice described in the following letter, of ploughing in the stalks, whole and

unrotted, before sowing wheat. The doubt is, whether soil receives equal benefit, and whether there may not thence arise some positive damage to the wheat crop. If the practice is beneficial aslate as is usually sown, it must be more so earlier, when the stalks retain much of their sap: and. therefore, it would suit well to be used in conjunction with the plan of gathering corn before it is dry.

Kennon's, Amelia, November 19th, 1833.

Dear Sir,—I will with great pleasure answer your inquiries respecting my method of plouging in cornstalks—but feel somewhat ashamed that the only communications made for the Register, by me, should be on the subject of *cornstalks*. The saving of labor in cutting down the stalks before gathering the ears, as detailed in my former letter, I deem of great importance, and regret that so few farmers have been prevailed on to adopt it. I assert as the result of *experience*, that if six hands be necessary to cut down and pick up corn, on the old plan, so as to keep ahead of your ploughs, that four *inexperienced* hands, can, with the short helved hoe, do it, and with three days experience, three will do the same with ease. But to return to the subject of ploughing in cornstalks. If the corn has been cultivated on a smooth surface (I mean without beds,) after gathering the ears, the stalks are cut with a long helved hoe, so as to cause them to fall promiscuously over the land. We commence ploughing (say with four two-horse ploughs,) a large land; (around the hill, if there be any) after going round twice, one active boy or girl follows the ploughs, picking up *only* such stalks as remain *uncovered* on the *ploughed land*, and laying them in the furrow of the last or hindmost plough, to be covered as the ploughs come round again. If your ploughs turn well, and the land be not very grassy, I think they will cover three-fourths of the stalks, leaving only one-fourth to be picked up, and laid in the furrows. I very frequently sow the wheat before ploughing, (guarding against covering it too deep,) and level the land with a bush or light log. If the land be ploughed before sowing the wheat, we harrow, of course, the same way the land was ploughed, to avoid pulling up the stalks.

If the corn has been planted on beds, we use the short helved hoe, in cutting the stalks, and lay them in the water furrow, to be covered by the ploughs. The information here given, is designed for your own use. After having tried the system, if approved, your recommendation would have more influence, than fifty of mine. I think the stalks thus managed, improve the land. I am sure you derive all the advantage that the stalk itself possesses.

The communication of Mr. Bruce in the last Register, I deem of more importance to the country, between tidewater and the Blue Ridge, than any article heretofore published by you. I have been practising the horizontal ditching for several years, and have no hesitation in saying, if the system had been adopted fifty years ago, that that section of country, now, would be worth fifty per cent. more than it is. After planting, I never plough the land but twice, and this year, used the hoes but once.

Very respectfully, your friend, J. H. S.

On the Culture of the White Mulberry Tree.

[FROM THE FARMER'S REGISTER.]

THE proper soils for this tree are dry, sandy or stony; the more stony the better, provided the roots can penetrate them. The situation should be high: low, rich, and moist land, never produce nourishing leaves, however vigorously the trees may grow. They are always found to be too watery. The same remark may be made upon the leaves of young seedling plants, which will not produce good or abundance of silk, and are only proper when the worms are young; say in the two first ages. It may be useful to have a parcel of these growing in a warm situation, that they may come forward before large trees, and serve for early food.

Mulberry trees may be propagated by—1st, seed; 2d, grafting; 3d, budding; 4th, layers; 5th, cuttings; 6th, suckers.

The ripe fruit may be sown in drills, in ground previously prepared; or the seeds may be washed out of the pulp, and mixed with an equal quantity of sand or fine mould, and then sown. They should be covered about a quarter of an inch deep. The seeds will soon vegetate if the ground be rich, and will live through the winter, unless the cold should be unusually severe. A quantity of plants from seeds thus treated, lived through the cold winter of 1825–6, in Philadelphia. In very cold weather, the young plants may be covered with straw, or long manure. The following spring, thin the plants so that they may stand one foot apart at least. Seeds intended to be sown in the spring, or to be kept, should be washed out, as they are apt to heat, or to mould, if permitted to remain in the fruit. Land destined for spring sowing should be dug or ploughed in the preceding autumn, left rough all the winter, and be harrowed or raked fine, as soon as the season will permit, and the seed sown in drills. The young plants must be watered in dry weather, and weeds carefully kept down. Weeds will not only stint the growth of the plants, but cause disease in them, which may affect the future vigor and health of the tree. In the second year transplant them to two feet distance from one another, to give room for cleansing and dressing the land. When transplanting, cut off some of the roots, especially those that are ragged or decayed, and the tap root, to force out lateral roots; and also the tops, at six or seven inches from the ground. When the plants in the nursery have sprung, strip off the side buds, and leave none but such as are necessary to form the head of the tree. The buds which are left should be opposite to one another. If the plants in the nursery do not shoot well the first year, in the month of March following cut them over, about seven inches from the ground, and they will grow briskly. They should be watered with diluted barnyard water.

When the plants have grown to the size of one inch in diameter, plant them out in fields or places where they are to remain, and make the hole six feet square; trim the roots, and press the earth on the roots as the holes are filled. During the first of planting out, leave all the buds which the young trees have pushed out on the top, till the following spring, when none are to be left, but three or four branches to form the head of the tree. The buds on these branches should be on the outside of them, that the shoot may describe a circle round the stem, and that the interior of the tree may be kept open; and as the

buds come out, rub off all those on the bodies of the trees. For several years after, every spring, open the heads of the trees when too thick of wood, and cut off any branch which crosses or takes the lead of the rest, leaving two buds on the outside of every trimmed branch. Count Verri, of Italy, an experienced cultivator of the mulberry tree, recommends to leave only one bud at the end of every branch, preferring those which are outside, and opposite to each other; and when three buds appear together, to leave the middle one, which is almost vigorous, and to detach the two on each side of it. If the superior buds do not push well, the two next lower ones must be left. Every farmer knows the very great importance of dressing ground round young trees twice in the course of a year, and of securing them to stakes, to insure an upright straight growth, and to prevent their being shaken by winds, or levelled by storms. The trees may be planted at the usual distance of apple trees. The intervals may be cultivated in cabbages, turnips or mangle wurzel. The attendance necessary to Indian corn, would endanger the young trees.

It is so much the practice in the United States to let trees take their chance for growing, after they have been planted, or sprung up from seeds or stones, that these particular directions may be disregarded. But let a comparative experiment be made with mulberry trees permitted to grow at will, and others treated as here directed, and the difference in their beauty and growth will be obvious. The advantage, in these respects, will be decidedly in favor of trees which have been attended to.

Without deciding upon the superiority of the various modes of propagating mulberry trees, it is thought proper to mention the great advantage of the mode of budding. In the year 1826 Mr. Millington, of Missouri, "budded the white mulberry on stocks of native trees; and such as were done before July, were forced out immediately by cutting off the stocks above the buds. Some of these buds made limbs more than two feet long by the 27th of October. The buds put in after the middle of July, he did not intend to force out until the following spring. He thinks budding more expeditious and surer than engrafting, and when it fails, does not injure the stock so much as this mode. Native stocks, to engraft or bud on, can be procured with ease: and the trees thus raised would not be liable to disease in their roots, like foreign trees; and these engrafted or budded trees would grow much faster, and furnish leaves much sooner, and of a larger size, and better quality. This would not be doubted by those who have observed how much faster an engrafted tree grows, and how much larger its leaves are than those of a seedling tree."*

Experience has fully shown that the leaves of the native mulberry tree produce good and strong silk, although not so fine as that from the white mulberry. Those, therefore, who have only the native tree, may begin their operations with it; and they will acquire a knowledge of the business of rearing silk-worms, while the foreign species is growing.

* Silk Manual p. 114.

On the Cultivation of Cellery.

[From the Horticultural Register and Gardener's Magazine.]

It appears to me that a few practical hints on the cultivation of this useful and delicious vegetable might prove interesting and serviceable to many of your readers. I beg to premise that it is a mere detail of the methods I have practised this summer, by which I have raised cellery in heads of two and two and a half feet high, of which twelve to eighteen inches are blanched and tender; they are single heads, without offsets, and many four and five inches in circumference. This method has one convenience, which is, that the young plants are raised in the open ground, without glass or hot-bed.

In the beginning of May, later or earlier, as the season may indicate, dig and pulverize well about six square feet of well manured and open ground; water it very lightly, but thoroughly, with a nose on the watering-pot, early in the day, then sow your seed and water again thoroughly in the same way. Cover up this bed lightly with a double layer of Russia mat, which should be dry, and kept down at the corners with stones. The sun striking on the mats penetrates them, and causes a general moist heat to rise from the earth; this is the most favorable state of an atmosphere for the vegetation of seeds, and the cellery, particularly if not fresh, is very difficult on this point; the covers should be maintained in as dry a state as possible, (after heavy rains, the upper mat might be changed,) because, if wet, considerable evaporation takes place in the night, which is always productive of cold, and would be apt to rot the tender shoots just piercing the seed; on the other hand, if dry, it prevents the escape of heat when the sun's rays have left the earth, and retains underneath sufficient warmth to prevent any check in the vegetation; in a fortnight or three weeks, according to the season, little yellow and white sprouts will appear; when these are one quarter of an inch high, the upper cover should be removed, that there may not be too much weight on the younger plants; and if the weather continues mild, in a few days afterwards remove the other. If well watered in the beginning, it will scarcely need any further moisture during the first process; but those who practice this method, will hardly be restrained from peeping under the mats once or twice during the fortnight, when, if sultry weather has prevailed, their own judgment will guide them on this head.

The second part of the method is to have another piece of ground, double the size of the former, prepared in the same way, and when the young plants are in their fourth leaf, or about two inches high, take them up and transplant them carefully into this fresh bed, about one inch asunder, first trimming the roots a little.

If well watered and weeded, by the first of July they will have attained sufficient growth to be removed into trenches, which should be prepared in the open, well exposed spot, by digging them two spades deep and two and a half feet wide, leaving three or four feet distance between the trenches: on this space is to be piled up, like a bank, the earth taken from the trenches. Put about four inches of good manure at the bottom of each trench, and dig it in; take up the plants, and previous to putting them into the earth, trim the roots very carefully, being sure to cut off the end of the tap root, and eradi-

cate all the shoots and radicles, where the heart joins on the roots, as these shoot up and produce that mass of small heads seen in our markets, instead of one large, solid, handsome plant; place them about three inches distance, and water well for the first week. As the plant grows, gently fill the trench with the earth on each side, taking care not to throw in large lumps, which twist and contort the celery, and spoil its beauty; and continue earthing up until there is a bank above ground as high as the trench was deep.

I prefer digging the trenches east and west, because the bank on each side shades the young plants, in July and August, from the rays of the hot sun, and in September and October, when it is desirable the celery should advance as much as possible, the southern bank, earthed up, imbibes the heat and retains it.

I believe, by covering up the trenches well with pine and savin boughs, it may be dug fresh all the winter; but I have placed mine in an upright position in the cellar, half covered with earth, and kept most. They appear to suffer but little.

I have been rather explicit, and give my reasons for each operation at the risk of being thought too prolific; but whenever I set earnestly to cultivate a plant, I have generally found directions in books rather too vague, and here and there a link wanting in the chain, which gave me trouble to annex; those, therefore, who are well acquainted with this process, must excuse this in favour of those who are not so efficient.

I. E. T.

New Potato, (Convolvulus Batatas.)

[Copy of a communication from L. Paubell, Esq. of New-Jersey, to William Prince & Sons, Proprietors of the Linnæn Botanic Garden, at Flushing. Communicated for the New-York Farmer, and American Gardener's Magazine.]

Gentlemen,—I have this day sent to Messrs. Swords, Sandford & Co. with a request to forward it as soon as possible, a small box, containing four roots, received from Martinico, by Mr. L. du Bereau, a gentleman of this place, as a species of the convolvulus Batatas, a specific name of which I am ignorant. They were recommended to him as superior to the common sweet potato; when boiled, they are harder than the Carolina kind; *le gout tient un peu celui de l'igname.* The root, it is said, will keep sound a whole year in the West-Indies; those sent have been dug these four months. They do not require a longer time to come to maturity of the kind cultivated with success in the lower part of this State. The foliage is a very good fodder, and is used as such in Martinico and Guadaloupe.

I think the introduction of this variety of potato in the United States, where it is, I believe, entirely unknown, may be of very great advantage; and should the heat in this latitude not be great enough to bring it to perfection, there is no doubt but that its culture in the Southern States will be attended with the success it has had in the West-Indies.

The possibility of introducing, through your means, a new vegetable into this country, is the only apology I can offer for the liberty I take of requesting you to give a trial to its culture, in hopes that you will be successfull in the attempt.

The importance of keeping Agricultural Accounts.

[FROM THE TENNESSEE FARMER.]

MUCH has been written on this subject, and though, perhaps, nothing is more plain and obvious, than the importance to the farmer, of an accurate account of the expenditures and profits of his various operations, so as to enable him to ascertain with precision, the loss sustained, or the profit derived from them; yet, perhaps, no subject connected with argiculture, is more imperfectly understood, or more universally neglected, by those who are immediately and so deeply interested in it. To satisfy himself of this, and of the immense loss annually sustained in consequence, it will only be necessary for a farmer to endeavor to ascertain by inquiry, even of the most intelligent and best practical farmers, the cost of raising a hog, horse, or a cow, of raising an acre of corn, wheat, oats, or clover, or of manuring an acre of land, &c. he will soon find, that it is almost impossible to attain any thing more than loose random conjectures on these, or indeed on almost any other agricultural subject.

Now, as it is very certain that the rearing of some kinds of stock, or the raising of some crops, is more profitable than others, and that there are various modes of doing each, some more, and some less profitable than others, nay, that some of these modes are attended with profit, and with some loss. What can be of more importance to the farmer, than to be accurately informed of the expenditures and profits of each mode, so as to enable him to select that one which will best reward his labor? It is owing mainly to the want of such knowledge, in no other way attainable, than by keeping the accurate accounts of the expenditures and profits of their various agricultural operations that so many are induced to persist in practices attended with actual loss, when it is completely within their power to substitute for them others, by which the same labor and expense would produce a handsome nett profit, a course of conduct always injurious to the farmer and the public, and often ruinous to the soil. The neglect to keep such accounts, is one main cause of the neglect of manuring. There are thousands and tens of thousands of farmers now annually impoverishing their lands, to the great injury, both of themselves and of their country, by continued cultivation, excessive grazing, and the neglect of manures, who, if they had that demonstrative proof, which accurate accounts would exhibit, that by a different course of conduct, more annual profit could not be derived from the same labor and expense, judiciously bestowed, accompanied by an annual improvement, in lieu of an annual impoverishment of their lands, would immediately, and with cheerfulness, abandon their destructive operation, and substitute for them, those which would be productive of opposite results. We, therefore, earnestly exhort our readers, resolutely to determine, that they will no longer content themselves with those loose, lumping, general estimates, always erroneous and unsatisfactory, and often productive of serious losses, but that they will keep such an accurate account of all the labor and expense attending their agricultural operations, and of the profits derived from them, as will enable them to ascertain with precision, the profit or loss resulting from each, so that they may continue the profitable ones, and abandon those of an opposite character. Without adopting such a course, it is impossible to form and to practice any system of agricultural economy, and without such a system, success

is not to be expected. While we thus earnestly recommend agricultural accounts, we are far from wishing to depreciate the importance of a rigid attention to similar accounts, by those of every other occupation in life. We are inclined to believe, that to habituate children to the keeping accurate accounts, would be a highly desirable improvement in the mode of education. It would have a powerful tendency to correct that disposition to be content with general lumping estimates, and that aversion to accuracy and precision in business, which forms a serious defect in the character of the age, and is of a most pernicious and demoralizing tendency.

We hope that the period is not very remote, when by means of a wise and judicious system of universal education, this with many other causes of vice and error, will be banished from our country, and when the heart of the patriot and of the philanthropist, shall exult at the prospect of soon seeing his countrymen elevated to that moral and intellectual preeminence over all former generations, without which, neither public liberty, or individual happiness can ever be secured and perpetuated.

Properties of Sugar.

Dutrone calls sugar the most perfect alimentary substance in nature, and the testimony of many physicians establishes the fact.* Dr. Rush, of Philadelphia, says, in common with all who have analyzed it, that "sugar affords the greatest quantity of nourishment in a given quantity of matter of any subject in nature." Used alone it has fattened horses and cattle in St. Domingo for a period of several months, during the time when the exportation of sugar and the importation of grain were suspended from the want of ships.

The plentiful use of sugar in diet is one of the best preventives that ever has been discovered of the diseases which are produced by worms. Nature seems to have implanted a love for this aliment in all children, as if it were on purpose to defend them from those diseases.

Sir John Pringle tells us that the plague was never known to visit any country where sugar composes a material part of the diet of the inhabitants.

Dr. Rush, Dr. Cullen, and many other physicians, are of opinion that the frequency of malignant fevers of all kinds has been lessened by the use of sugar. Dr. Rush observes, that, in disorders of the breast, sugar is the basis of many agreeable remedies, and it is useful in weaknesses and acrid refluxions in the other parts of the body.†

The celebrated Tronchin recommended "*Eau Sucre*" for almost every malady. Dr. Fothergill was very anxious that the price of su-

* He that undertakes, says Dr. Slare, to argue against sweets in general, takes upon him a very difficult task; for nature seems to have recommended this taste to all sorts of creatures; the birds of the air, the beasts of the field, many reptiles and flies, seem to be pleased and delighted with the specific relish of all sweets, and to distaste its contrary. Now, the sugar-cane, or sugar, I hold for the top are highest standard of vegetable sweets.—*Edward's West-Indies.*

† The celebrated Dr. Franklin had taken large quantities of *blackberry jam* for the pain of the stone, and found benefit from it; but discovered at length that the medicinal part of the jam resided wholly in the sugar. From half a pint of syrup prepared by boiling down sugar in water, and taken just before he went to bed, he declared that he often found the same relief that he did from a dose of opium.

It has been said that sugar injures the teeth, but this opinion does not deserve a serious reflection.—*Amer. Phil. Trans.* vol. iii.

gar should be sufficiently moderate to render it accessible to the mass of the people. From experiments made by some eminent French surgeons, it appears to be an antiscorbution, and this is confirmed by well known facts.*

Although sugar has for so long a time been used in our alimentary preparations, it is only since it has been analyzed by the French chemist, that it has come to be considered in itself an alimentary substance. The base of sugar is a glutinous matter, which, in proper combination, is extremely pure and perfectly soluble, and consequently in the most favorable circumstances for easy digestion. It is, therefore, extremely wholesome and nutritious. Of this there is abundant proof. During crop time in the West-Indies all appear fat and flourishing; the cattle which are fed on the cane tops and scummings, become sleek, and in better condition, although more worked at the time than at any other. The negroes drink freely of the juice, and the sickly among them revive and become fat and healthy. In China and in India the same beneficial effects are recorded. We are told by Sir George Staunton, that in the former country, many of the slaves and idle persons are frequently missing about the time that the canes become ripe, hiding themselves and living entirely in the plantations.

A writer from India observes, "The comfort and health arising to a poor family from a small patch of sugar cane, exclusive of what the jaggary may sell for, can only be known to such as may have observed them in the time of cutting the canes, and noted the difference in their looks before the crop begins, and a month or six weeks after."

The Chochin Chinese consumes a great quantity of sugar; they eat it generally with their rice, which is the ordinary breakfast of people of all ages and stations.

There is little else to be obtained in all the inns of the country but rice and sugar; it is the common nourishment of travellers. The Chochin Chinese not only preserve in sugar all their fruits, but even the greater part of their leguminous vegetables, gourds, cucumbers, radishes, artichokes, the grain of the lotus, and the thick fleshy leaves of the aloe. They fancy nothing is so nourishing as sugar. This opinion of its fattening properties had occasioned a whimsical law. The body guard of the king, selected for the purpose of pomp, are allowed a sum of money with which they must buy sugar canes, and they are compelled by law to eat a certain quantity daily. This is to preserve the *en bonpoint* and good looks of those soldiers who are honored by approaching so near to the person of the king; and they certainly do honor to their masters by their handsome appearance. There are about five hundred of them, all equally sleek and plump, being actually fattened by sugar. Domestic animals, horses, buffaloes, elephants, are all fattened with sugar cane in Chochin China.

Sugar has been found to be an antidote to the poison of verdigris, if taken speedily and in abundance; and unlike many other organic substances, its nutritious qualities are not liable to change from the operations of time or seasons.—*Porter on the Sugar Cane.*

* A vessel came from the West-Indies heavily laden with sugar. A calm that had not been foreseen, prolonged the passage till all their provisions were exhausted. The sugar was the only resource left to the crew, and nourished by it, they at length arrived safely in port. Some sailors had died of scurvey during the voyage, and many were threatened with death from the same cruel malady. The scurvy ceased when its victims were, from necessity, reduced to the sugar diet, and the remedy was, at the same time, an agreeable aliment.—*Le Gazette De Sante*, No. xliv. 1785.

PART III.

MISCELLANEOUS INTELLIGENCE.

American Silk.—On the supposition that we have imported annually silk to the amount of four millions dollars, since 1730, when the first filature of silk was established in Philadelphia, the whole amount of this would be 252,000,000. Had this quantity been raised and manufactured in this country, a far greater number of our people would have been employed than has been in the business attending its importation. The following we take from a communication to the Genesee Farmer:

"In 1770 a filature was established in Philadelphia, and premiums announced.

"In 1771, about 2300 lbs. were brought there to reel. The ladies in particular gave much attention to the subject; as early as 1770, Susanna Wright, of Lancaster county, at Columbia, made a piece of mantua of 60 yards in length from *her own* cocoons. To give eclat to these *Colonial designs*, the Queen of Great Britain gave her patronage by deigning to appear in a Court dress from this *American Silk*. Yes, in American Silk! but at the present day all our silk dresses, and even our ornaments for public buildings, must be imported. 'Grace Fisher, a minister among Friends, made considerable silk stuff; a piece of her's was presented by Governor Dickinson to the celebrated Catharine Macauly.' Many ladies, before the Revolution, wore dresses of *American Silk*.

American Silk.—The Philadelphia Herald speaks of Mr. Upton, of that city, as having been for eighteen years engaged in silk manufacture. There is a gentleman in this vicinity, (Mr. Cobb, of Dedham,) who, for a shorter period, has perhaps been working as effectively as any other person in the way of experiment. He began the cultivation of the mulberry tree in 1826; and since that time, notwithstanding the nature of the soil, which is not the most favourable, has extended his operations so much as to be now in the habit of bringing to the Boston market American silk, manufactured, to the amount of about a hundred dollars a week, the year round. Recently he has introduced the great improvement of raising his trees from *slips*, by which he gains two years in the growth. Those planted by him the last spring, we understand, have grown over four feet already. The mulberry, in this particular, excels all other trees.—*Bost. Mer. Jour.*

Singular application of Grafting.—New-Platz, Nov. 3, 1834.—Sir, I have a very valuable apple tree which had the bark eaten off a few inches above the ground, by mice, in the winter, and I took the following method to save the tree. I took four small twigs from another tree, and engrafted them below the wound, in the manner of side grafting, and loosening the bark above, bent the twigs and split them under the bark until they came parallel with the body, then covered them well by banking the dirt above the wound and grafts. I left the earth around one season, then cleared it away, and found two had taken. These have commenced to form new bodies, and the tree, from all appearances, is as thrifty as ever, and the twigs have grown in two years to the bigness of your thumb.

I am, dear sir, your humble servant, ABRAHAM STEEN.

To J. Buel, Esq.—*Cultivator.*

Rhubarb.—This is one of the many plants which a farmer may have in his garden, and may be made to contribute to the delicacies of his table, and to the health and comfort of his family, with very little expense or labour. The plant is perennial, and resembles much in its habits the burdock, though the leaves and their stocks may be somewhat larger, in a good soil. A dozen plants will serve to supply a family. The leaf stocks are the parts used. The skin or cuticle is pealed off—they are then cut into quarter or half inch pieces, and used without further preparation, with sugar and spices, like unripe gooseberries, for pies and tarts, which fruit it very much resembles in flavour. It may be used in the spring, and till midsummer. Medical men ascribe to it a salutary influence upon health,

particularly to children, when used in this way. The seed ripens about midsummer, at which time it may be sown.—*Cultivator.*

—

An Improvement in the Mode of Raising Annual Flower Seeds.—After sowing the patch of seeds, and covering it with fine moist soil, place a garden-pot inversely over it, until the seeds have struck root; then raise the pot up two or three inches, keeping it thus supported for a few days, and them remove it entirely. The pot not only keeps the soil moist, but by the sun heating the pot, the seeds come up much more quickly than otherwise they would do, in consequence of which the seeds need not be sown so early by a fortnight or upwards. The young plants are therefore less exposed to injury from cold or late spring frosts. Hollow tiles, instead of pots, answer equally well, except that where mice are, they have access to the ends.—*Gardener's Magazine.*

—

Waste of Manure.—"But as an example, may perhaps, bring this before you in a stronger point of view than in any other way I can put it, let me suppose that some of you should purchase a little tea at a grocers; as long as you keep it dry and shut up from the weather, it will preserve its original strength, even for years; but when you put it in a teapot, and pour water on it three or four times, the strength is all gone, and your tea becomes, I may say, dead useless matter. It is just so with your manure. I see it often placed in such situations that the rain water from your house and offices, and the seepage from the higher grounds, all run through it; thus every shower floods it day after day, carrying off always some part of the strength, until at length it is left as dead and as useless as the leaves thrown out of the teapot.

"Surely no man in his senses will persist any longer in such gross mismanagement. If you were to observe a man quietly stand by and see his potatoes destroyed, which were to be the chief support of himself and his family, you would say he was either mad or a downright idiot; and if this would be your opinion of him, what can you say of yourselves when you stand by and daily look on at the destruction of that manure by which your potatoes are to be produced?"—*Blacker's Essay.*

—

Dung from Hens for Onions.—I was told, Mr. Editor, by a farmer, that the onion crop is the most profitable that can be raised; that manure from the hen-house appears to be the *specific* one for them. It must, however, be used very sparingly, to prevent it from burning up the young onions.

Can any of the readers of the New-York Farmer inform me, if this dung is used extensively in those towns of Connecticut where this crop is so largely cultivated? I am a novice in farming and gardening, and hear many things from those in these pursuits, which I, in my limited reading, cannot find corroborated by additional testimony. A YOUNG MAN.—*N. Y. Far.*

—

Cows about to Calve.—Cows which are shortly expected to calve ought to be lodged at night in some convenient place, under cover, for a week or two before calving, as it might be the means of saving the life of the calf, and, perhaps, of the dam likewise. The day and night after a cow has calved, she should be kept under cover, and her drink should be lukewarm. Let her not be exposed for some time to the dampness of the night.

Cows which are near calving, ought to be fed with better and more substantial food than usual. Grain of any kind is now useful, but it should be crushed, bruised, or coarsely ground. If the cleaning of a cow after calving be delayed, it may be promoted, according to Dean's N. E. Farmer, by giving her a pail of warm water, with some ashes in it. Or according to Grazier's Guide, the only thing to be given is toast and weak wine, or good cider or perry. If wine be preferred, mix it with an equal quantity of water. This toast should consist of four pints of wine and water, and about a pound and an half of bread toasted.

Inflamed teats should be washed with two drachms of sugar of lead in a quart of water. Should tumors appear, apply a common warm wash of bran, with a little lard.

To prevent cows from sucking their own milk, it is said that rubbing the teats frequently with the most fetid cheese that can be procured, is an effectual remedy.

In order that it may be ascertained what is the proper time for cows to go dry, previous to their calving, an account should be kept of the time when each cow is put to bull, so that the cow may be dried off in due season. The following prescription for drying off cows is given in Monk's Agricultural Dictionary:

Take one ounce of powdered alum; boil it in two quarts of milk till it turns to whey; then take a large handful of sage, and boil it in the whey till you reduce it to one quart; rub her udder with a little of it, and give her the rest by way of drink; milk her clean before you give it to her; and as you see need, repeat it. Draw a little milk from her every second or third day, lest her udder be overcharged.—*Complete Farmer.*

Destruction of Ticks.—Having noticed an article in your last number recommending tobacco for the destruction of ticks upon sheep, with which I agree in all except the mode of applying it—instead of wetting them with a sponge before they are sheared, I think it would be more advisable to have a tub or some other large vessel standing by the shearers, and to have the sheep dipped into it after their fleeces have been taken off, in which case the ticks could in no possibility escape destruction. I have seen this method practised upon a flock of about one hundred sheep, among which there could not be one found that had not fifty ticks upon it, and some of them two or three hundred; but now there cannot this number be found upon the whole flock.

The stalks of tobacco, which are precisely as good as the leaves, can be bought at about one cent a pound, of which fifteen pounds are sufficient to serve one hundred sheep.—*N. Y. Far.*

A tried Receipt for Burns.—Keep on hand a saturated solution of alum, (four ounces in a quart of hot water,) dip a cotton cloth in this solution and lay it immediately on the burn. As soon as it shall become hot or dry, replace it by another, and thus continue the compress as often as it dries, which it will, at first, do very rapidly. The pain immediately ceases, and in twenty-fours under this treatment the wound will be healed, especially if the solution be applied before the blisters are formed. The astringent and drying quality of the alum completely prevents them. The deepest burns, those caused by boiling water, drops of melted metal, phosphorus, gunpowder, fulminating powder, &c. have all been cured by this specific.—*N. Y. Farmer.*

Domestic Yeast.—Persons who are in the habit of making domestic bread, cake, &c. can easily manufacture their own yeast, by attending to the following directions: boil one pound of good flour, a quarter of a pound of brown sugar, and a little salt, in two gallons of water, for one hour When milkwarm, bottle it and cork it close. It will be fit for use in twenty-four hours. One pint of the yeast will make eighteen pounds of bread.—*N. Y. Farmer.*

MONTHLY CALENDAR

OF

HORTICULTURE AND FLORICULTURE

FOR APRIL.

VEGETABLE GARDEN.

This is the best month for planting all kinds of Snap and Bush Beans. The varieties have of late years increased so much, that it is now difficult to distinguish many of those that were cultivated some twenty years ago. Different individuals give a preference to different kinds. In this city, the Gardeners usually obtain their supplies of Seed Beans from our Seed Stores, as their Seeds, preserved in the summer, are usually destroyed by the weevil. A much better plan would be, to save Seeds late in the fall, from kinds that have been found by experience most productive. These, if preserved in vessels tightly corked and kept in a cool place, are preserved till the following spring without much difficulty. [On some future occasion, we will endeavour to give recipes for preserving Beans and other Seeds from the ravages of insects.] Plant your Beans in rows about 20 inches apart—let the plants stand 6 inches from each other in the row, covered with a rake or hoe with 1 inch of earth. The larger kinds of Beans may be planted in rows two feet apart.

Your Carrots, Parsnips, Beets and Turnips, sown last month, will now be advancing fast in their growth; they must now be kept clear of weeds, be carefully hoed and thinned to their due distances. The Parsnips and Beets to stand within 8 or 12 inches of each other—the Carrots 5 or 6 inches when young, and

then may be gradually thinned for table use, suffering the general crop of plants to stand 10 or 12 inches apart—allow 8 or 9 inches between the Turnips—they should be thinned when the rough leaves are about half an inch broad.

The Onions and Leeks that were planted in the fall, will now begin to swell—let them be kept carefully weeded, and where any are running to Seed-heads, let them be pulled off—let the Onions stand about 8 inches from each other.

Sow Radishes every two weeks—you may also sow Leek Seed pretty thick in a bed for future transplanting—sow also Lettuce Seeds of various kinds—sow Celery and small Salading.

Plant Cucumbers and Melons about the beginning of this month—this is the most favourable season. For the method, see last month.

Plant Okra and Tomatoes Seeds—let the former be planted on ridges 4 or 5 feet apart on low ground—the Tomatoes may be sown in beds, and when the plants are sufficiently grown, let them be set out in hills 5 feet apart.

Plant also, in the beginning of this month, Squashes and Pumkins.

Hoe your Irish Potatoes, and keep them clear of weeds.

Let all kinds of Seeds be well watered till they come up.

FRUIT GARDEN.

There is not much work to be done in this department this month, as it is to be presumed your Fruit Trees were carefully pruned last month. You may, however, remove all young and useless shoots, especially those of the Grape, where the eye may be easily rubbed off by the finger, leaving only such shoots as are necessary for the next year's growth. Examine carefully your Pomegranate and Fig trees; most of these have been killed by the frost, but they will put out from the roots, and will soon form bearing trees.

Your new beds of Strawberries should be kept clear from weeds, and the runners carefully pulled off.

Let your new planted trees in dry weather be watered at least once a week, and we have often found an advantage in watering the branches as well as the roots.

FLOWER DEPARTMENT.

Sow Cleome Poinciana and all seeds natives of warm climates. If sown early, they seldom come up on account of the cold, and if later, the summer proves too short for their bloom.

FLOWERS AND NATIVE PLANTS THAT BLOOMED IN MARCH.

Our season has been unusually backward, and many native plants that commonly bloom in March have, as yet, scarcely made their appearance. We have noticed around our city the Cercis Canadensis and the Acer Rubrum, in full flower. The Chaptalia Integrifolia, and three species of our native Violet—the Viola Cuculata, Villosa and Primulifolia, and a Syngenesous plant Gymnostyles Stolonifera, growing sparingly at Hampstead, in the vicinity of Charleston. We have also observed the common Chickweed, Alune Medea, and the Guatiola Virginica, and in our gardens, the Tulips, Rhanunculus', Hyacinths, Stocks and Wall Flowers, Narcissus, &c. &c. have been very ornamental, though less so than in other years.

ERRATA IN THE MARCH NUMBER.

Page 135, line 17, dele the word "*wild.*"

" 168, line 6, from bottom, for Flax, read *Phlox.*